THE

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Editorial.

EXAMINATIONS—PRELIMINARY AND OTHERWISE.

"EXAMINATIONS," said a great educational authority, "are a great evil, but, I am afraid, a necessary evil." If our young student friends knew what a plague examinations are to examiners, they would probably be less furious in their denunciations when they find themselves plucked. The discussion which took place at the meeting of the R.C.V.S. on 5th January, presents some interesting points for discussion. Professor Dewar wished to delete the words "on June 30th, 1896," so that the bye-law regulating preliminary examinations should read, "Students shall . . . produce a certificate entitling the holder to be registered as a medical student." Professor Dewar, as I understand him, had no wish in making this motion to increase the difficulty of the examination. He had in fact on former occasions endeavoured to read into the bye-law, and induce the Council to accept the reading, that the standard of the Preliminary should not so much reach the 1896 limit as not overstep that limit. In other words, whilst the bye-law may have been intended to fix a minimum, Professor Dewar had wished to make it fix a maximum. If this is so, Professor Dewar's course was quite intelligible. Only now he finds, like Professor M'Call, that the 1896 standard has vanished, and students have to accept the 1899 and 1900 standard, whilst they get credit merely for the 1896. This he thinks unfair to our students, as calling forth the sneers of the medical school without cause and without foundation. The question is rather a serious one; either our candidates must get full credit for passing the difficult examination, or we must provide a special examination of our own, which may or may not rank with the medical,—probably it will not. Mr. Barrett pointed out that a loss had been sustained by the R.C.V.S. to the extent of £250, and he made gloomy predictions of the state of things to be expected if the present high standard is to prevail.

Having stated the case fairly, as I think, I should like to point out one or two difficulties in the way of providing a special examination of our own. I fear my colleagues hardly realise the magnitude and the delicacy of the task they propose to undertake. It is very fine to say, as Mr. Barrett does, "It would be a very desirable thing

indeed if the Council were prepared to arrange a schedule of their own, not following the medical profession." But the rules of the Medical Council are very simple, and that body does not examine itself, but entrusts its examinations to Universities and other purely educational bodies. In view of this fact, it is a little difficult to understand what Mr. Barrett says a little further on about rules which should "have the impress of the Council's mental power upon them." There is actually no scope for the display of mental powers. Then Mr. Barrett says that our rules are to be equal in severity to the medical rules, and immediately afterwards says that Professor Dewar, who proposes exactly the same thing in another form, is leading the Colleges to bankruptcy. Professor Dewar thinks there is no escape from the Preliminary examinations on the medical standard, and he simply wishes to claim credit to the candidates for passing it; Mr. Barrett proposes an equally stiff examination minus the credit.

I trust Mr. Barrett does not propose that the Council of the Royal College should set its own papers. How many of its members could venture, even with all the mental powers attributed to them by Mr. Barrett, to set a paper, let us say, in elementary Latin? Let us suppose, however, that the Council agrees to appoint a body of scholarly men to prepare its examination papers. Such men are to be found in the country, upright, honourable, conscientious men; but how are we, a scientific body of practical surgeons, to find them out, and how are we, when found, to control them? It must be carefully kept in mind that the Preliminary is a literary and scholastic examination, and must be conducted by scholars as distinguished from men of science. Now, if we are to avoid the intricacies and thorny paths of arithmetic and grammar, we must select some scholarly expert to supervise our examiners, and if our examinations are to be superior or even equal to those of the medical school, we must get some outstanding man and pay him accordingly. We cannot, I maintain, supervise them ourselves; if we attempted to do so, we should immediately find ourselves confronted with technical difficulties quite insurmountable and quite impenetrable, and nobody would attach much importance to our decisions on purely literary questions, and no one would value our certificates of fitness. But perhaps the most important aspect of this question is the economic or financial side. Let us suppose we have a hundred candidates every year for admission to our schools and charge each of these a guinea; I am afraid £105 will not go very far, after deduction of the charges for printing and postage and minor details, towards procuring a body of examiners whose opinions shall be respected and whose verdicts shall be trustworthy. But this supposes that all our candidates must pass through our own portals, and that is a very wide supposition. We must accept equivalent certificates, as, for example, in Scotland, the Leaving Certificates of the Education Department. All the best schools in Scotland send up their best pupils for this examination,

and regulate the work of the session with a view to it. The department charges no fee, and thus a parent or schoolmaster may argue that nothing is lost if a boy or girl happens to fail. Then the certificates are issued in July at the beginning of the summer holidays, so that the candidate, when he goes home to his father's house, knows that he is supplied with a key that will open many locks, including the medical lock. Let us see how this works out. A parent living in Cornwall or Caithness knows at the end of July that his son has practically passed the Medical Preliminary, and he takes measures accordingly; he arranges for his son's board or lodging in Edinburgh, Glasgow, or London; he keeps the boy beside him till the day before the medical classes open, giving him the greatest possible advantage to be obtained by living in the country; there is no harassing anxiety in the mind of either as to the possibility of exclusion from the classes, and the parent can calculate his expenses to a farthing. All this is changed when a special examination has to be faced a fortnight before the classes open. The holiday time is clouded by the uncertainty of results; doubts arise as to the advisability of entering on a career beset by pit-falls at the very beginning; calculations of expenses are rendered futile for want of an important factor, and all this worry is intensified by the feeling of uncertainty as to the scope and standard of the new examination, for which, it may be, the school attended by the boy has not specially fitted him. Let us further suppose that the boy, the son of a hard-working clergyman, doctor, or tradesman, comes from his remote corner of the country and fails in his preliminary; the cost of the railway journey itself may be no inconsiderable item, and then there is the same ordeal to be faced six months later. Even if the candidate should get through, he has had the expense of living in the University town a fortnight or three weeks longer than he otherwise would have had. From this it is quite evident that equivalent examinations such as those of the Scottish Educational Department *must* be accepted by us; there is no escape. To this extent the number of our candidates would be diminished without diminishing the cost of the examinations.

All the arguments I have used concerning home certificates must apply to foreign and colonial examinations. We are delighted to see the stalwart sons of our colonial friends and of men living under other flags than the British coming to our colleges to be taught, as perhaps their fathers were taught before them; but we must remember that if a journey from Penzance or Wick is a serious item in a poor man's expenditure, a sea voyage from Cape Town, Melbourne, or Calcutta is much more serious. We must therefore be prepared to accept certificates from schools and colleges abroad, and who is to guide us in our selection? Must we not simply follow in the steps of our universities—in other words, follow the lead of the medicals?

I lay these considerations before my brethren in the Council as

my contribution to the discussion, in the hope that they may prove useful and prevent hasty or immature legislation. It seems to me we are in a dilemma. On the one hand we wish to attract a supply of students, of recruits for our scientific army. This is natural on the part of the teachers, who live—if not wholly, at least partly—by the work of teaching, but it is likewise necessary for the well-being of those who are already in the profession. Nothing is so inspiring as contact with intelligent young men: their very freshness and impetuosity act as a spur to us, and new efforts and further advances seem in their presence not only essential but delightful. Those who would bar the entrance-gate act therefore a foolish part: they are obstructing a possible career for their sons or nephews, and they are rendering their own intellectual atmosphere dull and heavy. All this is apart from the need of supplying the country with competent veterinary surgeons. On the other hand, we must not open our portals too wide and admit all and sundry who clamour for admission. Not every man is worthy of being admitted to the medical ranks, because not every man is worthy of being entrusted with our family affairs—it may be our family secrets. Only men of broad culture and wide sympathy ought to have this privilege. In the same way not every man ought to be allowed to study veterinary medicine. The care of our horses and cattle ought not to be entrusted to ignorant, prejudiced, or malevolent men, even although they may acquire a superficial cleverness by plodding industry and application to their scientific studies. The difficulty is to know to what extent we are to open our doors. If we guard them as carefully as the medicals, we court bankruptcy. Mr. Barrett says: "If we open them wider we lose prestige. I should like to avoid bankruptcy. By instituting examinations of our own we should run both risks. I should like to avoid both risks. I think that the rule compelling students to pass in all subjects at one examination should be altered to the effect that if they pass a certain number—say the half—they should not be compelled to undergo a second examination upon those subjects.

UNSEXING ANIMALS.

IT is probable that the emasculation of animals in some crude manner became a necessity almost as soon as men began to make beasts subservient to their interests as domesticated animals. Even before the sheep or ox was bred under control, men must have discovered that an old ram was less toothsome than one of the other sex, and a bull was a more dangerous antagonist than a cow. The reader will take it for granted, then, that castration is almost coincident with the domestication of animals.

Savage tribes visited for the first time by white men are every-

where found to be in possession of some means of gelding, if they have made the first step in civilisation and become graziers.

The operation requires no justification; necessity created it. It may be repugnant to us as lovers of animals, but our personal safety and pecuniary interests, and the improvement of the herd, alike demand the emasculation of all but the fittest for procreation. Where this rule has been best observed, the live stock of a district is the most valuable, and where the peasant farmer persists in saving his own bull from the knife, a mongrel lot of cattle prevail. In contiguous counties like Gloucester and Somerset, you may see in the first named the good effects of pedigree animals introduced and maintained by a great nobleman, while in the next, where every one keeps a bull, there is a great falling off in quality, more especially among the small holders.

The methods of castration which cling to a district would seem to point in the past to the adherence by a family of castrators to a particular method which proved most successful, and still for some occult reason shows a smaller percentage of bad results. "Occult" reason, we have said, in the absence of any explanation, but in face of the fact, as most experienced castrators will probably testify.

Castrating is to most country practitioners an important part of their business, and one of the last to be wrested from the empiric. In some districts it is still almost exclusively practised by men who travel over a wide area during the spring months and operate on colts, calves, and pigs at all ages, and despite their condition, so long as a fair day's work can be totalled up during the short time in which the gelder's services are in full demand, and before he passes again out of sight into a long period of hibernation.

The young veterinary surgeon settling in a breeding district, where perhaps hundreds of pounds are spent annually in castrating, finds it very difficult to obtain the work. Why is this? The answer is a very unpalatable one. The castrator is a man who operates successfully and at a low charge. As to his success, it is useless to deny it; his crude methods have brought him a good name, and very likely his fathers have practised the operation before him for a century or two. He sharpens his knife upon his dirty boot, and finishes it on his gaiter; his clams are never cleaned, but there are plenty of honest men to testify that he has done their work for a number of years, and they have never lost anything. This is a hard nut to crack. To argue upon the matter is hopeless. The farmer is not a bit impressed with the latest two-guinea instrument and elegant case of antiseptics. Old "so-and-so" was successful, and they don't wish to change. To suggest a better method (by a better man) is only to court humiliation in most instances. It may even happen—we know too well it *has* frequently happened—that the up-to-date veterinary surgeon has had a death follow among the first few animals he has been called upon to castrate, and the memory of it has served to remind him for a life-

time that either his battery of scientific appliances was incomplete or his lucky star not just then in the ascendant. As scientific men, of course we do not believe in luck, but as private individuals we do.

The editors tell me they do not want a scientific article on this subject, but have chosen me as an old castrator to state my views, and give any practical hints I can that will enable the younger men to add to their incomes by securing for themselves as much as possible of the unsexing of animals in their district. Very well, then, you can get as much science as you like from books, many of them written by men who have done no castrating themselves. I have nothing to say against them, only that the methods they advise—the antiseptics for instance—are not practicable in the pig-stye and seldom in the straw-yard or hovel, where the colt or calf must for convenience be operated upon or turned in subsequently. Perhaps some day they will be able to show us how to avoid the very rare losses that follow upon old methods,—at present they cannot.

As I am permitted to offer advice, I would say to the young man beginning on his own account, adopt that method which has proved successful in the hands of your nearest rival. If you purchase a practice, follow your predecessor's plan of operation until you are sufficiently established to make experiments with what may only turn out to be scientific toys. If your opponent is an elderly man, he will not care for what has been called "acrobatic surgery," and you can make a strong point of the lessened risk (to the *colt*) attendant on the standing operation, and have a stock of arguments against the superannuated method of castrating.

The Fee.—I have seen many young men deterred by the poor pay that awaits the castrator, but this is, I think, a mistake, and for the following reasons:—

In the first place, if the charges are small, the outlay is *nil;* the work will be always recurring; you do it when you are "that way," and you keep out an opponent. If you shirk castrating and allow an unqualified man to do it, your employers argue that you are either above your business, or wanting in a knowledge of its rougher details. The enemy will not admire your nobility for not competing with him, but imply that you *can't* do it, and when on the farm for his own special purpose, he will undertake to advise on some other matter, perhaps on a case you are attending, and having had all that you have said repeated to him, will stand in an excellent position to point out that you are wholly wrong.

Castrate at the same price as the castrator, and your district will in time be not worth his while to visit. You are on the spot, and can point to calves that have sustained less check in their progress by being done young, instead of waiting for a sufficient number of various ages for the convenience of your rival.

Of the methods of castration I do not propose to say much.

Abler pens have described, and you have doubtless read, all that can be said of the subject. I would only say as an old hand that I believe in the firing iron as the most aseptic instrument, and in verdigris ointment as the most effectual dressing.

A gentleman signing himself "Topos," in a letter published in *The Veterinary Record* of March 6th, 1897, suggests an explanation which I venture to reproduce as better than anything I could write on the subject:—

"Sir—If I may trespass on your valuable space for a few moments, I should like to refer to the discussion on Captain Nunn's paper on castration. Professor Penberthy states that the operation was performed as successfully a hundred years ago as to-day; a statement in which I fully concur, and possibly I may go a little further and say, if it is not heinous heresy to utter it, that then, before the days of antiseptic surgery, it was even more successful than it is to-day, and that verdigris, powerful antiseptic as it may be, has gained the place it holds by virtue of properties of quite a different nature, viz.—properties of a high therapeutic value in traumatic peritonitis. If the learned professor would have my authority for such a statement, I would ask him to recall to mind the symptoms of copper poisoning, and tabulate them with the symptoms often exhibited by a colt after castration without verdigris, and then talk to Mr. Hurndall for half an hour; the result, I think, will be food for reflection for both.

"I know that in this letter I am laying myself open to the charge that my views are retrogressive rather than progressive, but I plead not guilty, and ask for a wider view of disease than that of all-prevailing micro-organism. Even that champion of the tribe, Koch, has apparently thrown his friend the microbe to the winds in his rinderpest research, and seeks for the antitoxin before he searches for the organism. Men of the allopathic and homœopathic schools did this for years—and from the traditions handed down to us they are not wholly unsuccessful—till the micro-organism arose, and like a mould obscured the vision. I am the last to deny the presence of the micro-organism in disease,—its presence is all too frequent; but I am growing sceptical about its causal relation to disease, and I feel that we search for the microbe and forget the hot-bed in which it grows—the body.

"May not the administration of arnica internally, as used by Mr. Hurndall, affect the 'macro'-organism in such a way as to injuriously affect the micro-organism? If so, is it not better to prepare the seed-bed by some antitoxin or therapeutic agent antagonistic to the invading microbe, rather than as it were hoe up with an antiseptic the luxuriant growth that troubles us? Botany is still of use to the veterinary surgeon if only it is practical, for it will keep in his mind that there is a seed-bed as well as a seed to be attended to, and that it is quite as important as the seed.

"I must apologise for the length of this letter; my excuse is

that I feel that we sometimes want to be reminded that a micro-organism is not the only thing a veterinary surgeon has to study and contend with.—Yours truly, TOPOS."

I have spoken of castration hitherto only as applied to the male, and may here say that if the qualified veterinary surgeon does not do as much castration as he might, he certainly does less spaying.

If castrating the male animal is a cruel necessity, it appears to many kindly people that spaying is even more cruel, because it can be done without. It will be in the memory of some readers how the R.S.P.C.A. attempted to abolish it by an action which was carried to the High Court of Justice (*Lewis* v. *Fermor*), but Mr. Justice Day gave a verdict for the defendant on the ground that the operation of spaying pigs was justifiable because increasing their tendency to fatten, and avoiding the production of bad meat.*

Pig-breeders in the eastern and south-eastern counties will have their sow pigs spayed by some one, and he who does the sows will of course operate on the boars, and castrate the rest of the stock on the farm. "He who takes the fat must take the lean," as a farmer justly observed to the writer when this subject was under discussion.

If you live in a spaying district, you must spay or allow it to be said that you *cannot;* no one will believe that you can and won't, and that you let in voluntarily a rival about whom you are not invariably discreet in your remarks, for you must indeed be a cautious man if you never show jealousy in face of the often rude jests of the market-place.

Disregarding the sentimental side of the question, which everyone must decide for himself, it may be remarked that it pays better to operate on a whole farrow of pigs than on two or three boars. Indeed you will not often be called upon to do them at all, as any one can hack out the testicles of a pig, but spaying is a really smart operation.

I visited the Royal Veterinary College at Camden-Town some twenty years ago, and was informed that spaying was not taught at that institution, and I afterwards ascertained that when a bitch was sent to that College to be spayed an unqualified man from Kent was employed to do it. It is not for an outsider to offer opinions as to what should or should not be taught, but it certainly struck me as leaving open the door to what are called "quacks."

It is generally agreed that animals of either sex have a greater tendency to fatten when unsexed, but the disposition of the bitch to do so has been greatly exaggerated. The statement that spayed bitches became fat and useless went forth by one of the early writers, and has been repeated without experience of the subject, and as an excuse to avoid an operation with which the practitioner is not familiar, and for which he may not expect a large fee.

* Witnesses were present who stated that the bacon made from a sow when hogging would not take the salt, and there was no rebutting evidence.

They have been said to lose their nose as sporting dogs, and their energy as guardians of the flock. With a large experience, I deny the latter assertions, and as to the laying on of fat, it may be compared to the greater tendency of the gelded horse to fatten when he does not get enough work. If castrated dogs and spayed bitches are worked and fed in a proper manner, there is nothing to be feared from the effects of being made neuter. On the other hand, the shepherd's dog does not neglect his or her business at a critical period, and the sporting bitch is never a nuisance when she ought to afford her owner pleasure.

If the sheep-dog and the spaniel should be castrated or spayed, how much more the domestic pet, the companion of ladies and children in the street? This class is of course more liable to lay on flesh, but obesity is the curse of the idle and luxurious of the canine tribe, whether unsexed or not.

Cats.—Singularly enough the cat was the last animal to be spayed, although the first to require it at our hands. Think of the volumes of "swear words" that have been uttered over thousands of generations of cats "making night hideous," and yet until a comparatively recent date there was but one veterinary surgeon who undertook to spay cats. I am credibly informed that he had pocketed hundreds of half-guineas for this operation. The disposition of the female cat is not altered (except for the better) by depriving her of the essential parts of the reproductive organs. She does not become fat or indifferent to her duties as a mouser, but the curious thing to me is that she develops a head like a tom, and does not change her coat by regular moults as do entire cats and gelded males. Several she-cats have taken prizes against others because they were in good coat, and their competitors were not, but nobody, including the veterinary surgeon appointed, could ascertain whether or not they had been operated upon.

There are a few points in connection with spaying to which I would venture to call attention, and a few others which I would suggest to the veterinary profession as needing elucidation.

Generations of men who spay bitches have inherited a tradition that an animal intended to be so operated upon should have sexual intercourse nine days previously. Seven or eight or more than nine will do, but nine is preferred. Although sprung from a race of castrators (with books of account going back two hundred years), I have never been able to get a reason for this preference, but have noted in my own experience of many bitches that if spayed in early pregnancy no signs of œstrum subsequently are seen. If spayed as virgins, rarely do symptoms of rut show at the appointed period, but under any other conditions the operation will be followed in perhaps 10 per cent. of bitches with more or less œstrum at the usual periods.

Why should this be so? On what physiological grounds can it be explained?

In rare instances spayed cats show symptoms of œstrum, which pass off and do not recur in some that have come under my observation ; there has been persistence in the recurring periods, and, if I may so describe it, a mental condition of nymphomia, an erotic delirium. Shortening of the remaining portion of the uterus has proved effectual in more than one instance.

In conclusion, I would like to enlist the interest of some one scientific gentleman who is not prematurely wearing out his sight with the microscope, and ask, Why does a steer's head resemble a cow's instead of a bull's, and a gelded cat that of a she-cat, and a spayed cat take on the features of a tom, and a hen pheasant put on cock plumage if her ovarium is pricked or twisted? Why doesn't a spayed cat change her coat like others, and why doesn't emasculation affect the male in the same way?

ONE OF THE OLDEN TIME.

THE DEATH OF "HOLOCAUST."—OSTEITIS OF FATIGUE.

IN an article on this subject the *Revue Scientifique* reminds its readers of a paper written by M. G. Joly on "the solipedisation of the horse and his congeners at the present day," and contributed to its pages in 1897. In that article M. Joly showed that, under pressure of the demand for ever-increasing swiftness at an increasingly early age, the skeleton of blood-horses was becoming more and more solipedised, and that chiefly at the point marked by the canon and the tarsal bones. This article was the outcome of long and patient labour which the author had been carrying on for years at the College of Saumur; the results of this labour are published in the *Revue Vétérinaire* of Toulouse. In it M. Joly has proved by numerous facts that the constitution of the skeleton may be profoundly modified by what he calls "the osteitis of fatigue," first in the individual and then in his descendants. Alongside the modifications described under the name of solipedisation M. Joly shows that the pathological exostoses of the legs known under the designation of bone-blemishes, defective conformations, equilibrial defects or essential diseases of the foot, are simply various manifestations of one and the same affection, individual at first and then hereditary, to which he has given this significant name.

This osteitis of fatigue, which is rarefying (or attenuating) in several of its manifestations, causes by its mere presence a fragility of the osseous tissue which may be extreme, and bring about the fracture of a limb in the course of a gallop or even a simple walk. M. Joly quotes several cases of these enigmatical fractures of the pastern, of which it seems the fracture of Holocaust's pastern was

merely a repetition. Veterinary surgeons, ignorant of rarefying osteitis of fatigue, used to explain these enigmatical fractures by supposing an antecedent crack in the bone, but there was no tangible proof of this, and only shallow minds were satisfied with the explanation. The studies of M. Joly (checked by the Principal of the Veterinary College of Saumur) explains definitely this mystery, which, by an extraordinary coincidence, has been further dispelled by the application of the X rays to the "forced foot" of the infantry soldier. Military surgeons show that "forced foot" is caused by two orders of lesions, namely, (*a*) fractures of the diaphysis of the metatarsal bones, and (*b*) arthrites and sprains of the metatarsal articulations. Simple marching, they say, under military conditions—that is, for a prolonged period and with the military equipment—may bring it about; when traumatism, a fall, a shock, a false step intervenes, the type of fracture is modified. Thus the infantry, as well as the cavalry, pay their tribute to "osteitis of fatigue"; it fractures the metacarpal bones of the one and the pastern of the other.

ROYAL COLLEGE OF VETERINARY SURGEONS,

10 Red Lion Square, W.C.

December Examinations, London.

At meetings of the Board of Examiners held on and between December the 8th for the Written Examination, and December 12th to 14th for the Oral and Practical Examination, the following passed their Final Examination and were admitted members of the Royal College of Veterinary Surgeons:—

Messrs. H. G. Allen, D. Crole, O. S. Fisher, H. H. Jeffries, G. T. Jackson, *J. C. Mumley, *A. Spicer, E. Little, B. L. Lake, P. J. Maher, H. Mosley (under age), G. V. M'Naboe, A. L. Purdy, F. S. Probyn, J. A. Russell.

The following passed their Third Examination:—

Messrs. H. Anthony, R. Burt, W. G. Evans, J. W. Flanagan, *E. Nicholson, J. Nicholas, T. Parker R. H. Pinching, W. N Rowston, W. S. Stevens, C. E. Turville, †H. E. Whitemore.

The following passed their Second Examination:—

*Messrs. B. H. Benson, A. A. Donnelly, A. Edgar, J. C. Hally, R. E. Klyne, P. J. L. Kelland, A. C. Lloyd, R. Norford, *J. R. Steevenson, F. W. R. Thomas, R. P. Williams, G. H. Ward.

The following passed their First Examination:—

Messrs. F. Hewson, T. F. Hancock, A. Lloyd, W. L. Little, T. Love, F. D. Neal, J. C. Philips, D. O. Turnbull, A. J. Thompson.

Marked thus * passed with 2d Class Honours.
Marked thus † passed with 1st Class Honours.

Arthur Wm. Hill,
Secretary.

Fellowship Degree.

An examination for this degree was held on Monday, December 11th.

Four candidates entered for this examination. The theses of all were accepted, and they were allowed to proceed with the written and oral portion of the examination. The following is a list of those who passed and duly received the Diploma :—

Messrs. W. Scott, W. Cargill Patrick H. C. Reeks, J. H. Wilson.

Arthur Wm. Hill,
Secretary.

ROYAL COLLEGE OF VETERINARY SURGEONS.

A quarterly meeting of Council was held on Friday, January 5. There were present Mr J. Fraser, President, in the chair; General Frederick Fitzwygram; Vet.-Colonel Lambert; Professors Dewar, Edgar, J. M'Call, Shave, and W. O. Williams; and Messrs. Abson, Barrett, Bower, Lawson, Locke, Mason, Villar, Wartnaby, and Wragg. There were also present Mr. Thatcher, the Solicitor, and Mr. Hill, the Secretary.

The President having wished the members the compliments of the season, the minutes of the last meeting were taken as read, and agreed to. Letters were read from Dr. Delapine and Professor Duguid, resigning their positions as examiners to the College, the former through increasing demand upon his time, and the latter owing to the impaired state of his health.

On the motion of Mr. Lawson, seconded by Mr. Bower, and supported by Professor W. O. Williams, the resignations were accepted with regret, and the best thanks of the College presented to Dr. Delapine and Professor Duguid for their past services.

Letters were also read from Dr. Sims Woodhead and Mr. Clark, thanking the Council for their appointment as examiners for the Walley Memorial Prize.

Meat Inspection.

The Secretary read a letter from the Local Government Board, dated November 23, 1899, referring to the request of the College that the President of the Local Government Board would receive in conjunction with the President of the Board of Agriculture a deputation on the question of the appointment and qualifications of meat inspectors. The Board enclosed copies of circulars issued by them on the 11th March, in which they referred to the recommendations of the Royal Commission on Tuberculosis on the subject of the qualifications of meat inspectors, and stated that they did not propose to initiate legislation in connection with the matter until in any case more experience had been obtained of the working of the arrangements mentioned in the circulars. Under these circumstances Mr. Chaplin did not think it was necessary to trouble the proposed deputation to attend at the present time.

There was also a letter from the Board of Agriculture stating that they would arrange a deputation, if convenient, but it was received before that of the Local Government Board.

The following resolution of the Scottish Metropolitan Veterinary Medical Society was also read: "That this Society communicates with the Royal College of Veterinary Surgeons, and every Veterinary Medical Society in the United Kingdom, that the unanimous opinion of the veterinary profession is in accord with the following resolution, namely, 'This Society is of opinion that meat inspection and the supervision of the lower animals destined for food and milk supply of the nation should be placed in the hands of trained veterinary surgeons. It is also of opinion that, to secure the efficient conservation of the public health, the employment of inspectors selected from the veterinary profession is the safe and only means of attaining that object.'"

A resolution to the same effect was also read from the North of England Veterinary Medical Association.

Mr. VILLAR suggested that the Secretary should be instructed to write to the Secretaries of the two Societies, pointing out what had already been done by the Council, and assuring them that the Council were looking very anxiously after the interests of the veterinary profession in these matters.

The PRESIDENT thought it would be wise to elect a committee of three or four members to take the subject into full consideration, and bring up a report to the Council. Every member knew how important it was to the veterinary profession that the duty of meat inspection should be discharged by that profession, and by it alone. He thought if the present opportunity was allowed to pass, the chance was gone for discharging a public duty which they felt was imperative. Very shortly other men would be in the field who were not qualified for the work, and then it would be too late.

Professor DEWAR said that, in view of the reply which had been received from the Local Government Board, and the statement of the President, he should be very pleased indeed to propose "That a committee be appointed to report upon the subject of meat inspection, and the position of the veterinary profession in connection with the appointment of meat inspectors."

Mr. VILLAR asked whether it would be possible to include in the work of the committee the consideration of the Local Government Board regulations as to the inspection of dairy cows, but the President thought the committee had better confine themselves to the question of meat inspection, as there was no attempt to displace veterinary surgeons at present in the examination of cows.

Mr. LAWSON seconded Professor DEWAR's motion.

Replying to Colonel LAMBERT, the PRESIDENT said that what the committee would do would be to suggest some means by which the inspection of meat would devolve upon the veterinary profession. Now it was diverted from the profession to another body of men altogether.

Professor W. O. WILLIAMS said the present position did not seem to be clearly understood. The veterinary profession was of opinion that they ought to hold the posts of meat inspectors. The Local Government Board had declined to hear their views. He thought they were all agreed that they ought to hold those posts, and it was in their minds that they ought to have a further qualification to enable them to hold such positions. In October 1898 he suggested that a post-graduate degree should be granted to members of the profession in meat inspection and in veterinary hygiene. Unfortunately his motion was not thoroughly understood, and it was not

carried. He was still of opinion that it was necessary for the profession to obtain an additional certificate or qualification before they would be recognised as being able to inspect meat. If a post-graduate course was instituted, and the Council appointed a Board of Examiners to examine all those who attended the course, and granted a certificate, that would enable veterinary surgeons to obtain the position they desired to obtain. He should like to know whether it was the feeling of the Council to have a certificate in meat inspection, or just simply apply to the Local Government Board for recognition.

The PRESIDENT said that was exactly his view, but Professor Williams' speech demonstrated the need of a committee to thrash out the whole thing, and bring a report to the Council. On the resolution being put, it was carried, and the following gentlemen were elected the committee :— Professors Dewar, M'Fadyean, W. O. Williams, Colonel Lambert, and Messrs Simpson, Lawson, Mulvey, Villar, and the President.

Re Registration.

A draft letter proposed to be sent to the Privy Council in regard to Mr. N. D. Dhaknarvala's application for registration was read and agreed to.

Re National Telephone Company.

An application was made by the National Telephone Company for permission to erect standards and stays at the top of the College building, the Company undertaking to do repairs, and to pay one guinea a year as rental.

Mr. WRAGG moved that the consent of the Council should be refused, and this was seconded by Mr. MASON.

As an amendment, Mr. BARRETT moved that permission should be granted to the Company on payment of 5 guineas a year and a written undertaking to repair all damages.

The amendment was seconded by Mr. Wartnaby, but on being put was lost, and Mr. Wragg's motion refusing consent was agreed to.

Presentation of the Steel Memorial Medals.

The next business on the agenda was the presentation of the Steel Memorial Medals to Professor M'Call and Professor F. Hobday. Professor M'Call being too ill to attend, his son, who is a member of the Council, represented him. Professor Hobday was present.

The PRESIDENT, in making the presentations, said : Gentlemen, When I was in Glasgow a few days ago, I was sorry to find Professor M'Call suffering from a severe attack of lumbago, and I regret to hear that he has not sufficiently recovered to bear the fatigue of a journey to London. I do not think that you would like me to send this medal to him by post as if it were a mere article of merchandise without a word of congratulation. As a teacher of many years' standing he has, through his students, largely influenced the profession.—(Hear, hear.) How many men whom he passed through his classes he has inspired by his example to undertake scientific work it would be impossible to say. Personally, I have been much impressed by the service Professor M'Call has rendered as an expert

witness, both in our Courts of Justice and before Royal Commissioners. In this particular he has few equals and no superior. His contributions from time to time to the literature of veterinary science have been varied and valuable. Their value has been greatly enhanced by the fact that he is not hasty in forming his judgments, and that they have always been based on a wide experience. I hope that now, being assisted by his gifted sons, he will have more leisure, and may I suggest in your name that a portion of it may be devoted to the solution of some of the many problems that perplex the minds of veterinarians.—(Cheers.)

Professor Hobday, I am pleased that you are here with us to-day, because it gives me the pleasure of placing this medal in your hand. It is not often that one so young in any profession receives such a token of esteem from his colleagues. I heartily congratulate you.—(Hear, hear.) Your achievements in the domain of surgery have given you a prominent place in the estimation of the profession. I have no doubt that many a veterinary surgeon has successfully performed operations, especially on the smaller animals, which he would not have attempted without your example, and, in many instances, instructions. Your enthusiasm, energy, and devotion are, like many other good things, contagious. I hope you will continue, as I have little doubt you will, your labour; and of this you may rest assured, your reward will be the esteem and appreciation of a generous body of men. Professor Hobday, it gives me much pleasure to hand you the Steel Memorial Medal.—(Cheers).

Professor HOBDAY: Mr. President and Gentlemen, words fail me when I want to express the gratitude I have towards you for the very great honour you have done me in giving me this medal. I can only tell you that this is the proudest moment of my life, and I shall value this medal beyond anything else that I possess or ever have possessed.—(Cheers.)

Registration Committee.

The Secretary read a report which recommended certain prosecutions and inquiries in regard to advertising by members and practising by unqualified men. The committee also reported having considered certain applications for restoration of names in the register. In one case the recommendation was not made, and in the other case the solicitor was instructed to communicate with the applicant.

On the motion of Mr. LAWSON, seconded by Professor BOWER, the report was adopted.

Examination Committee.

The Secretary, in the absence of Mr. Mulvey, read the report, which, on the motion of Mr. Abson, seconded by Mr. Locke, was adopted.

Finance Committee.

The Secretary read the report, in which the committee informed the Council that a loss of about £200 had been sustained during the past year on the examinations. The committee regarded that as a serious matter and one which should at once receive the careful attention of the Council. There had been fewer students entered, without a corresponding diminution of expenses.

Before the report was adopted, Mr. Barrett desired to offer a few remarks upon it. He thought the members would all agree that it was perhaps the most serious report that had been presented. It stated that a loss of £200 had been sustained in the last year, but it seemed to him that that sum might have been placed at £250, for during the year 1898 about £50 were received as dividends on consols. It was a matter which the Council would at once have to take in hand and give careful consideration to. He moved that a special committee should be appointed to go into the question and report to the Council at its next meeting.

Professor BOWER seconded the motion, which was agreed to, and the following gentlemen were elected as the committee,—Messrs. Abson, Lawson, Locke, Pemberthy, Simpson, Wartnaby, and Wragg.

The Report was adopted.

Court of Examiners.

The Secretary read the report of the Christmas examinations, showing the numbers of those passed and rejected in England and Scotland, together with the examiners' and delegates' reports.

Mr. WRAGG moved the reference of the reports as usual to the examination committee, and Mr. MASON seconded the motion.

Mr. LOCKE asked if the examiners had carried out the provisions of bye-law 86, to meet together at the close of the examination to take the sense of the whole as to the qualifications of the students.

The PRESIDENT: Yes.

Mr. LOCKE mentioned a case where he considered the student had hardly received full justice. The student had been rejected three times under Class C. He was a very nervous man, and lost his head at times, but was known to be a very good student, and always passed well in the written examination. The last examination he only lost passing by four marks at one table.

The PRESIDENT said he had attended all the examinations himself, as had several colleagues on the Council, and he could say with the utmost confidence that the whole of the instructions of the Council had been carried out by the examiners to the letter. No injustice of any kind was done to any one. The examiners could not possibly pass a student who did not reach the minimum number of marks. He wished especially to single out one examination, the written in London. One or two members of Council on more than one occasion had insinuated that there had been, to use a common expression, some cribbing at the examination. He had never personally believed that, but at the late examination he was perfectly satisfied there was no ground whatever for that reflection on the students.

Colonel LAMBERT confirmed the President, and said he never saw anything more admirably carried out.

Mr. LAWSON said he was also very satisfied with the way in which the arrangements for the examination were carried out. The only suggestion he could make, would be with regard to the horses that were provided. He thought a horse should either be decidedly lame or decidedly sound. Several horses were present at the last examination which it was most difficult for a student to make up his mind about. He thought a member of Council might take upon himself the responsibility of selecting a few of the horses before the examination.

Professor SHAVE said he was not quite sure that the consultation had always taken place after an examination. Some part of the examination might take two days, and another part three days, and it was hardly likely that the examiners would return in order to consult with their colleagues.

Mr. BARRETT asked the President if, when he said the examination had been properly conducted, he had in his mind the question of the conferring of the examiners afterwards.

The PRESIDENT said he had.

Professor SHAVE said he was simply referring to Mr. Locke's remarks. He did not say the examinations were not conducted in a proper manner.

Mr. BARRETT asked whether the bye-laws did not state that the examiners were to confer at the conclusion of the examination. If the examiners had left town before one branch of the examination was completed, how were they to confer?

The PRESIDENT said there might not have been a conference required. If a student passed the examination in anatomy and physiology, the stable management examiners would not require to confer.

Professor WILLIAMS begged to differ from the Chairman on that point. If the examiners on veterinary hygiene found a man had almost passed, but was not quite good enough to be passed by them alone, then it was very necessary indeed that they should consult with the examiners on anatomy and physiology to hear what their opinion was. He considered that conference was necessary in every case. There was another matter he wished to refer to, which had a very serious interference with the studies of students, when unexpectedly the Board of Examiners was very considerably altered. Theoretically, students ought to know their subjects perfectly, and theoretically examiners ought to know their subjects perfectly. As a matter of fact, examiners had hobbies of their own, and teachers taught students those hobbies specially for the examinations, in addition to their ordinary teaching. It caused a very serious disturbance in the whole curriculum of colleges, when the examiners with fads went to South Africa or some other place, and new men were put on who had no known fads. He simply made those remarks so that the Council might perhaps in future adopt a suggestion which had been made on more than one occasion, that there should be a relief of examiners.

Replying to the President, both Mr. LOCKE and Professor WILLIAMS agreed that it would answer their purpose if their questions were referred to the Examination Committee.

Professor DEWAR said he had no intention of making any reflection on anything said by the President or on the examiners, but he knew as a matter of fact that the consultations did not take place in all cases at the last examination.

The PRESIDENT said that if Professor Dewar made that statement he should make it specifically, and name the examiners.

Professor DEWAR said he would do it if the Council went into Committee.

On the suggestion of the PRESIDENT, Professor Dewar promised to bring the matter up before the Examination Committee.

On the resolution being put it was carried.

Obituary List.

The SECRETARY read the Obituary List.

Mr. VILLAR then moved "That the Council of the Royal College of Veterinary Surgeons, at the General Meeting held on the 5th January, desire to convey to the Veterinary Surgeons of the Army Veterinary Department, now serving in South Africa, New Year greetings, and to express the earnest hope that they will safely return from their arduous and patriotic duties." He thought if such a motion was passed it would give gratification and some moments of happiness to their friends over the water.

Mr. BARRETT, in seconding the motion, said they all respected the officers of the Army Veterinary Department, and appreciated the arduous work in which they were engaged. He felt sure that such a motion would be received with much pleasure by them.

Vet.-Colonel LAMBERT said he was very glad that the Council were going to express their sympathy with the veterinary officers in South Africa, who, in some instances, were exposed to the great dangers inseparable from war.

The resolution was carried with acclamation.

This concluded the business of the Ordinary Meeting.

A Special Meeting of Council was held following the Quarterly Meeting, the same members being present, with the addition of Mr. Cope.

The first business was the consideration of the Standing Orders settled at the Council Meeting on the 3d October.

Professor W. O. WILLIAMS proposed that the Standing Orders should be suspended for another three months for further consideration.

Mr. LAWSON seconded the motion.

Mr. BARRETT regretted such a resolution being brought forward, for the reason that the Council had on several occasions considered the Standing Orders, and had devoted considerable time to them. He thought it would be a great mistake, and stultify all that had been done, to suspend them any longer. He thought it was an attempt to evade passing them altogether. He proposed that the Council should proceed with the business and pass the Standing Orders in due course.

The motion was seconded by Mr. MASON.

Mr. WRAGG proposed that they should be rejected. He said that for fifty-five years the Council had been carried on by the aid of the existing bye-laws, and by the gentlemanly feeling that had always been displayed. If it was necessary to have bye-laws he should consider that the Council had descended to the level of a rowdy vestry, which he refused to believe was the case.

Mr. WARTNABY seconded the amendment.

Professor DEWAR moved as a further amendment that the Standing Orders should be suspended for a further three months, and copies of them as amended supplied to members of Council, which was seconded by Professor J. M'CALL.

On this amendment being put it was lost, 6 voting for and 7 against.

Mr. WRAGG'S motion for rejection of the Standing Orders *in toto* was then put, and 4 voted for and 4 against. The President gave his casting vote for the motion, so that the Standing Orders were rejected by 5 votes to 4.

Professor WILLIAMS objected that his motion had not been put, but the President ruled that the matter had been decided, and that it was not necessary to put his motion.

Professor DEWAR then moved to amend bye-law 52 by the deletion of the words "on June 30th, 1896." The bye-law thus amended would read as follows:—"Students who enter the veterinary schools shall, prior to their first professional examination by the Royal College of Veterinary Surgeons, produce a certificate entitling the holder to be registered as a medical student." He said that on previous occasions he had attempted to obtain the consent of the Council to an alteration in the bye-law in the direction of the meaning which it was undoubtedly intended to bear at the time it was passed, namely, that there should be a preliminary general knowledge examination for veterinary students similar to that required by the General Medical Council for medical students at that time. At the time it was passed there was little ground to find fault, as the various examinations, the junior examinations at least, were on a footing of equality in the several divisions of the kingdom. But times changed and examinations changed with them, and it was certainly a very different examination that the students were called upon to pass to-day from that required of them after the passing of the bye-law. He had been told that his proposals were retrograde, and calculated to injure the prospects and status of the profession, but he was only attempting to do what was intended to be done by the Council when the bye-law was passed, namely, to obtain for the students an examination equivalent to what the medical student had to pass at the date of the passing of the bye-law, June 30th, 1896. Every argument that was then used in support of the bye-law could be used in support of the proposed amendment. Those who were zealous in their endeavour to maintain the status of the profession had now an opportunity of manifesting their zeal. There was now an opportunity of doing something not only to maintain but to improve the status of the profession. The stringency of the examination had been increased since 1896, and students were required to pass a more severe examination. Why not let the students and the profession get the credit for it? If the amendment was agreed to it would not be open to any medical student, or any one who wished to disparage the profession, to say that the entrance examination was only what was required of medical students in 1896. The time might certainly come when the bye-law would require to be again altered, when the College might be able to follow the lead of the General Medical Council; but in the meantime let the students obtain the credit that they had honestly earned, and let the examination be in name as well as in fact the same as that required from medical students.

Professor EDGAR seconded the motion, reserving his remarks till later on in the debate.

Mr. VILLAR opposed the motion. He said he was present at the time the bye-law was passed, and distinctly remembered that the Council were very anxious indeed it should be understood that the standard of examination for the medical profession on June 30th, 1896, was sufficient for the veterinary profession. If the motion by Professor Dewar was passed, the stringency of the examination might be increased. It was well known that any alteration in the Medical Council's examination would be on the side of stringency. Only that day the Council had been told that there had been a falling off in the number of students who presented themselves, and

if the stringency of the examination was increased the decrease of students would be still greater.

Mr. BARRETT said that if the motion was carried the examination would be considerably further increased in severity—("No, no,")—and therefore he was at a loss to understand the complete change of front which Professor Dewar had adopted. He pointed out that in approving the motion the Council were taking upon themselves a very serious responsibility. During the past year a loss of £250 had been sustained, and if the bye-law was amended during the next year there would be a loss perhaps of £500. The position ought to be seriously considered. He thought it would be a very desirable thing indeed if the Council were prepared to arrange a schedule of their own, not following the medical profession. Surely the time had come when some of the members had sufficient brains to do that. The question was discussed very earnestly some years ago, and there were some members who thought the Council ought not to be drawn at the wheels of the medical body, some thinking that the time had come when the veterinary profession were capable of drafting their own rules, rules which should be equal in severity to those adopted by the medical profession, but which should emanate from the Council, and have the impress of the Council's mental power upon them. Professor Dewar was advocating a motion which was likely to lead his and other Colleges to bankruptcy.

Professor W. O. WILLIAMS said that before the matter was decided he should like a full investigation to be made into it. It would be noticed in the schedule that the very first body mentioned in the list of examining bodies was the University of Oxford Junior Local Examinations (certificate to include all the required subjects at one time). That to him was the crux of the whole thing. It would be possible, if the amendment was carried, for a man, instead of presenting himself for his preliminary examination before he entered on his collegiate studies, to attend his first year as a professional student, and he would then present himself for his preliminary examination, which would include perhaps the subjects of chemistry and biology. He would really be able to evade some of the subjects that the Council considered necessary for a man to have a knowledge of before he could present himself for his first professional examination.

Professor EDGAR considered the objections made to the deletion of the words absolutely theoretical; the severity of the examination would not be increased one iota. For a long time there had been a contention that the veterinary profession were equal in educational standards to the medical profession. There was no intention on his part to follow the chariot wheels of the medical profession. Veterinary surgeons were so linked with the medical profession that veterinary medicine was only a part of medical life. Comparative pathology was the other side of it. That which answered for the medical profession's preliminary standard must of necessity answer admirably for that of the veterinary profession. Whatever standard of education was adopted, the vast percentage of men always came in in the weakest examination. Could anything of a more elementary character be wanted for a lad of sixteen or seventeen than the Junior Local Examinations of Oxford and Cambridge, or Edinburgh, or Aberdeen? The students in Ireland, Scotland, and England were provided with the same elementary examinations that they had got to-day. There were hundreds and thousands of Board School boys who could pass the examinations that were being asked of veterinary students. The advanced classes in all

Board Schools throughout the country put a man in possession of such information as was asked of veterinary students, and it was bringing down such students to the level of artisans if the Council refused to do what Professor Dewar asked. To set one's mind on money was to make a mistake. The best possible evidence of the value of the four years' scheme was found in the fact that now, in spite of the early opposition it met with, it had the undoubted support of all the Professors in the Scotch schools. If the Council succeeded in making the veterinary profession an educated profession, gentlemen would come into the profession instead of blackguards, as there had been too many in the past. (Cries of "No, no.")

The PRESIDENT asked Professor Edgar to withdraw that expression.

Professor EDGAR said that perhaps it was too strong, but it was made in the heat of debate. At the same time he thought the only possible way of improving any profession was by educating it. A continuous effort in that direction had been made for the past seven or eight years, and now, just on the eve of reaping the benefits, dust was being thrown in their eyes and the door closed in their faces. On every hand now, and for the next four or five years, the medical profession would be competing against the veterinary profession, and all arguments would be closed by saying that veterinary students were equal to medical students in point of education, and gentlemen in every way.

Professor J. M'CALL wished for a clear definition of what was meant by a certificate entitling the holder to be registered as a medical student on June 30th, 1896. At the present moment he did not think there was any examination that had anything to do with June 30th, 1896, which any student entering the veterinary colleges had to pass. The examinations had been raised since that time, and veterinary students went up for an examination which was exactly the same as that of medical students. If the Council were not prepared to rise to the occasion now, and ask their student to pass the same examination as medical men, they should enforce the bye-law, and have an examination which would conform to that bye-law. He mentioned the case of a lad who was entitled to be registered as a medical student, but who was refused by the College on the ground that his certificate did not contain the fact that the lad had passed all his examinations at the same time.

Mr. THATCHER (the Solicitor) said the bye-law had to be interpreted as it stood. The regulations and bye-laws of the Medical Council were something like the Code Napoleon—they meant something when they were read, but when one considered all that with which they were wrapped up and encumbered, they meant something else. He complained of the manner in which the Secretary and himself were treated by the Medical Council, the officers of which body appeared to think "You are inferior beings, you veterinary surgeons, find it out for yourselves, and do not try to be the beings we are." He advised the Council to have a schedule of their own, and to go by their own rules, and not be led by people who considered them inferior. There was no doubt that the medical profession was beginning to find out that veterinary surgeons were pressing them very closely, and they were very jealous of them. He would therefore say to the College, "Cut yourselves free from the Medical Council altogether." Professor Dewar might bring the matter forward on the next occasion, and no doubt the thing would be carried in a way everybody could understand.

Professor DEWAR, replying on the discussion, admitted that to some extent he had changed his front, but that was simply because he was met with such absolute denial that justice could be obtained for veterinary students. He agreed entirely with what Mr. Thatcher had said, and thought perhaps the Council would take note of Mr. Thatcher's words. If it would do anything to prevent a proposal such as Mr. Thatcher had made being carried out, he would be quite willing to withdraw his motion, but he did not see how Mr. Thatcher's proposal prevented the words being deleted at the present time, and students and the profession given the credit of the examination they are now passing.

The resolution was then put and lost, 4 voting for and 8 against.

Professor W. O. WILLIAMS then moved,—"That at the quarterly meeting in October 1899 the Council shall fix the dates of the membership examinations to be held during the following December, May, and July, and the date of the quarterly meetings of Council to be held during the following January, April, and July." He pointed out that Professor M'Fadyean had proposed that the dates of examinations and Council meetings should be fixed once a year, but owing to some little awkwardness it was agreed that Professor Williams should bring forward a motion at that meeting.

The PRESIDENT pointed out that Professor M'Fadyean's resolution would come into force in July, Professor Williams' motion coming into force at once.

Mr. ABSON seconded the motion, which was agreed to.

The following dates were then fixed:—

Council Meetings.

April 2d; July 6th.

Examinations.

May.—Written, 18th; Oral, 22d.
July.—Written, 10th; Oral, 12th.

On the motion of Mr. BARRETT, seconded by Professor W. O. WILLIAMS, a vote of thanks was accorded to the President, and the Council adjourned.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary general meeting was held at the Royal College of Veterinary Surgeons, 10 Red Lion Square, London, W.C., on Thursday, December 7th, at 7 P.M. Mr. Matthew Clarke, President, in the chair.

MEAT INSPECTION AND MEAT INSPECTORS.

BY W. HUNTING, F.R.C.V.S.

Discussion.

Mr. J. F. SIMPSON thought the paper dealt with a subject where some amount of difference of opinion was justifiable. There were some who took an extreme view one way: there were others who took an extreme

view the other way: and he thought that after that night, when the subject had been well thrashed out, they would be more in a position to come closer to the centre, and in all probability to map out some course which would be acceptable to the whole body of the profession. He thought that Mr. Hunting in his remarks had thrown out some hint that in all probability alterations in their regulations ought to be made so that veterinary surgeons desiring to hold the certificate of the Sanitary Institute would be able to do so. He did not know, however, whether there were many members of the profession who would care to submit themselves to an examination by what he would, with all respect, call an outside body, a body who would submit the candidate to an examination inferior to the one required to be passed by veterinary students at the present day for meat inspection. In the short time he had had the paper before him, he had endeavoured to make out what were the recommendations of the Royal Commission with regard to meat inspection, and he failed to see why the Royal Commission recommended that a man should not be a meat inspector, however competent he might be, unless he possessed a knowledge of the goodness and badness of other foods. He thought if the Sanitary Institute had been content to examine meat inspectors upon that subject alone, that possibly less would have been said than had been said. But it would be remarked that they did not propose to do that, but they tacked on to the meat inspection the inspection of other foods, and said that unless a man possessed the certificate either of an inspector of nuisances or a sanitary inspector, he could not be examined as a meat inspector. He had looked through the syllabus with regard to the knowledge required by a sanitary inspector, and he ventured to say that, however much a member of that profession might desire to qualify himself for the certificate of the Sanitary Institute as a meat inspector, he could not, unless he desired to forsake his profession for at least a couple of years, make himself competent to pass the Sanitary Institute's examination for a sanitary inspector. That was not the case with regard to inspectors of nuisances. There the examination appeared to be less severe, and doubtless a man with ordinary intelligence, applying himself to the subjects in the syllabus for a short time, would be able to pass that examination. But he thought the whole question which was in their minds was this: Should veterinary surgeons be appointed for the inspection of meat only? There was this to be said for the arguments of one side, that in a large city it was possible—in fact it was necessary—to employ a veterinary surgeon for the inspection of meat only; but with other local authorities there would be insufficient work for a veterinary surgeon to inspect meat alone, and it was, he took it, for that reason that the Local Government Board had insisted that an inspector of foods, including meat, should have a knowledge of those other subjects to which he had referred. The object of the Local Government Board was doubtless to impose as little expense upon small local authorities as possible, and in order that one officer, by passing such an examination as had been suggested by the Sanitary Institute, should be able to perform the double duty of inspector of nuisances and meat inspector. He was bound to say that unless some alteration was made with regard to the suggested certificate of the Sanitary Institute, local authorities would undoubtedly take advantage of that; small local authorities scattered all over England would combine the duties of inspectors of nuisances with that of inspectors of meat. Others would instruct their own sanitary inspector, who held the Sanitary Institute's certificate, to do double

duty. It was no good crying over spilt milk, but it was most unfortunate that at the time the London Public Health Bill was before Parliament no effort was made to secure recognition of the veterinary surgeon as the proper man to inspect meat in London. That was extremely unfortunate, not only because veterinary surgeons in London had lost those appointments, but because it had created a precedent. They would remember that the Royal College of Veterinary Surgeons, some few years ago, when the Scottish Public Health Bill was before Parliament, sent him to interview Lord Balfour of Burleigh, the Secretary for Scotland, and he also went to see other influential persons. He was met at once with the argument, "What did you do in London? Did you do anything to obtain for the veterinary profession the recognition that you are now asking shall be granted to them by the Scottish Bill?" He had been bound to admit that it had been an oversight on their part. It was a poor excuse, but he had referred to it as a great misfortune that they had not, at the time the London Bill was before Parliament, insisted upon their rights. The Scottish Act contained now the clauses which enabled the authorities in Scotland to employ veterinary surgeons as meat inspectors.

Mr. G. UPTON (Epping) thought Mr. Simpson's remarks rather wandered from the point. Mr. Simpson had said that large towns could afford to appoint a veterinary surgeon as inspector of meat. That was quite true, but in the small country districts veterinary surgeons could very well do the work as part of their business. He considered the certification of meat inspectors by the Sanitary Institute as a loophole into quackery.

Mr. W. F. BARRETT said he had listened to the remarks of Mr. Hunting with very considerable pleasure and some instruction, but Mr. Hunting had been guilty of great illogicality. In his paper Mr. Hunting had said "that an enormous quantity of diseased and putrid meat is consumed is certain, and to an audience of veterinary surgeons it is quite unnecessary to argue the necessity of inspection." Then he went on: "Our special duty seems to be to lose no opportunity of insisting upon its importance to the general public, at the same time that we carefully assert our claim to be the only body of men who are so trained and educated that we can perform the duties of inspection with justice to the consumer and purveyor." Mr. Hunting immediately afterwards proceeded to show that persons holding a qualification other than that of veterinary diploma were just as capable as the man who possessed such qualifications. With regard to uniformity of inspection, he thought they were all at one with Mr. Hunting that inspection should be uniform. One of the recommendations of the Royal Commission was with regard to standards of soundness. It was impossible to have any fixed standard as to what should be soundness and what unsoundness. In the opinion of one expert the carcase might be fit for human food, and in the opinion of another not. He failed to see how any central authorities could lay down rules which could be inflexible and binding upon veterinary surgeons who, no doubt honestly, had diverse opinions. He considered the examination of the Sanitary Institute to be of the simplest possible character, and could not understand how anybody could hold that the examination was at all equivalent to that of the veterinary surgeon, or that the man who possessed the certificate of the Sanitary Institute could pretend to be on an equal footing with veterinary surgeons. He could not for the life of him understand why the Sanitary Institute had acted so ridiculously as to hold that no one could present

himself for examination and qualification without first receiving a certificate as a sanitary inspector. He thought it should be suggested to the Sanitary Institute the advisability of admitting every veterinary surgeon on the payment of a small fee. The question was, Should veterinary surgeons only be appointed to inspect food which was intended for consumption? He was in harmony with the views that had been expounded by Mr. Hunting. There were cases, no doubt, where the veterinary surgeons alone should be appointed. He could quite conceive that in cities of the magnitude of Manchester, Liverpool, and London, where there were public abattoirs, that a veterinary surgeon should be appointed, and he considered it was the duty of veterinary surgeons as far as possible to see that only members of their own profession received the appointment. But there were many instances where it would be utterly impracticable to appoint veterinary surgeons only. In the case of small towns there were perhaps half a dozen private slaughter-houses, and there were villages where there might be again three or four private slaughter-houses, and where the nearest veterinary surgeon might reside eight or ten miles away. How could ratepayers of that limited community be put to the expense of bringing a veterinary surgeon down every day in the week to examine one or two sheep? It seemed to him unreasonable. Veterinary surgeons had to take a broad view of the matter. They had to regard themselves, not as members of a profession, but as citizens of a great community. As Mr. Hunting had said, the ratepayers who paid must have some voice in the matter. Until public abattoirs were universally provided, it was inopportune and unwise to ask that veterinary surgeons alone should be appointed. Rather they should go to the Sanitary Institute and say: "Our examination is superior to yours. The training which we have had far exceeds that which you desire in the men you admit to your examinations and grant certificates to. If that be so, let us come in, charge us some small fee, but grant us your certificate, place us on equality with those who have qualified, and we, with our better knowledge and skill, can show to the world that we are duly qualified with those whom you certify to the world as qualified."

Professor MACQUEEN said he had been trying to take a broad view of the matter as well as Mr. Barrett, and he did not think he should have ventured to say anything at all if it had not been for the remark to which Mr. Barrett had just given utterance. Mr. Barrett's broad view was an extremely narrow one from the profession standpoint. Mr. Barrett did not go to the length of some members of the profession in maintaining that the veterinary surgeon only should be the meat inspector. A good many years ago he had the same opinion, but since the extension of the curriculum and the improvement of the teaching, and also since the improvement of the examination, he thought veterinary surgeons at the present time were the only properly educated men for meat inspection. With regard to the question of small villages, that was not worth thinking about. If meat was to be inspected before it was consumed, then the community would be quite well prepared to pay the veterinary surgeon with the same freedom that they would pay the sanitary inspector, or the holder of the Sanitary Institute's certificate. There were very few villages in the country nowadays that were so far removed from the veterinary surgeon that he could not carry out the work of inspection. Mr. Hunting, with his usual caution, had printed the part of his paper which was not

disputable; everybody agreed with the first two slips. The difficult point of the paper, however, Mr. Hunting had carefully confined to manuscript, and he had read it so fast that it was almost impossible to follow him. The difficulty appeared to him to be that the certificate of the Sanitary Institute would run alongside the veterinary diploma, and, for the appointment of meat inspectors, would probably be considered on the same footing. Veterinary surgeons should object to any such thing as competition in the matter of meat inspection. He was surprised that Mr. Hunting, as long as he held an appointment with the R.C.V.S., so long as he held a position as examiner for the R.C.V.S., should ally himself with the examination, and probably the teaching, of candidates who would by and by come into competition with veterinary students and veterinary surgeons. Outside the profession, or to any one not connected officially with the examination of veterinary surgeons, there might be no special objection to a man promulgating the views in favour of the Sanitary Institute's certificate, but when a man had official connection with the R.C.V.S. as an examiner, he should consider first the wisdom of trying to serve two masters. There was a difference of opinion both amongst the public and the profession, but he hoped that eventually the veterinary profession would become unanimous upon the question, and that meat inspection by veterinary surgeons would be the acknowledged system throughout the country. Against the qualifications of the candidate who obtained the Sanitary Institute's certificate were to be placed the qualifications of veterinary surgeons. The veterinary surgeon brought to his work a knowledge of animals, and a knowledge of the diseases, that really almost converted the comparison into a ridiculous thing.

Mr. HUNTING: Quite so.

Professor MACQUEEN, continuing, said there was not the slightest doubt that the veterinary surgeon was very much better equipped for the work of inspection than any member of a Sanitary Institute. Mr. Hunting's paper seemed to suggest that the veterinary profession might very well overlook the introduction of the thin end of the wedge, and rather patronise the use of the new certificate. The only effect of the certificate, as far as he could see, was that the holders were likely to come into competition for appointments as meat inspectors. He agreed with Mr. Simpson that it would hardly become members of the profession to undergo a further examination conducted by butchers and members of their own profession. Mr. Hunting would no doubt explain what his motive was in writing the paper, which did not very clearly appear in the reading of it.

Major J. A. NUNN mentioned the point that in the *Bulletin de la Société Recueil de Médicine Vétérinaire* of the 30th October he had read an account by Monsieur Moulé of Septicæmia in Deer, giving some very curious appearances in some of the venison which was examined in Paris. He desired to know whether any member with experience in the inspection of game or venison could inform him if he had ever noticed the peculiar appearance referred to. A curious fact about it was that M. Moulé pointed out that the carcases of venison were carcases of fallow deer. He made some experiments by inoculating guinea-pigs from them, and the pigs died in from twenty-four to forty-eight hours, with undoubted septicæmia. Other carcases of roe-deer were in the same condition, and two carcases of bear meat, the flesh of which was used in parts of the Continent, also appeared to be in the same condition.

Mr. STAINTON said he should just like to say a few words on the subject, because he had been through the course at the Sanitary Institute, and had attended the lectures bearing on meat inspection. He started out of curiosity, and went on through enjoyment. Mr. Hunting led off at the lectures with "The signs of health in life and after death," and "the position of the organs," &c. He had on his right a young plumber's apprentice, and on his left a bricklayer. One medical man lectured on the proper way to slaughter cattle, and another medical man explained how they should be stalled, and as to ventilation and drainage; and then there was a demonstration by a medical officer of health. It was a good demonstration, with some splendid specimens, and of course the girls were highly interested, although they did not know the liver from the lungs—the young bricklayer did. The course consisted of six or seven lectures, extending over two weeks. When the pupils started on the course they hardly knew a cow from a horse, and he did not consider two weeks' lectures could be sufficient for any of the candidates to pass out from that examination and speak with any authority. The lectures were very simple, but there was very great ignorance among the candidates. The question was whether it was right of veterinary surgeons to fight the Sanitary Institute because veterinary surgeons had missed their opportunity, and the Institute had been sharp enough to take it up. It was far better that there should be a certificate of some kind granted than none at all. The Institute was doing its best and doing it honestly, and it was playing it a bit low down to object to them doing it just now. He thought if the profession stood out for a higher ground instead of being bracketed with sanitary inspectors, veterinary surgeons might be put in a position of medical officers of health, and made veterinary officers of health. Any professional man who was worth his salt would not wish to be a meat inspector at the rate of pay they got. He agreed with Mr. Barrett that they ought to consider themselves citizens of a great community, and not merely veterinary surgeons. He did not think the Sanitary Institute wished to be in antagonism with the veterinary profession. He considered the veterinary profession should be superior to jealousy, and try and work with the Institute.

Mr. R. PORCH, like Mr. Stainton, had been through the course of the Sanitary Institute, and testified to the excellent demonstration of meat inspection which he saw. The course lasted from January to March. If veterinary surgeons waited until public abattoirs were built before claiming their rights, they would find then that the men who had been climbing the ladder in front of them would hold their position. It appeared to him that the Sanitary Institute had endeavoured to keep every one else out from becoming meat inspectors; they would not permit a veterinary surgeon to undergo their examination. If they permitted veterinary surgeons to be examined, and granted them a certificate, then he did not think there would be much to complain about. But when a man was debarred, as he was now, by not being allowed to obtain a certificate unless he became a sanitary inspector, then he thought it was time some complaint should be made.

(*To be continued.*)

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting was held at the Grand Hotel, Manchester, on Thursday, December 7th—Mr. J. M'Kenna, President, in the chair.

OÖPHORECTOMY OR OVARIOTOMY OF THE MARE.

BY FREDK. HOBDAY, F.R.C.V.S.

Mr. PRESIDENT AND GENTLEMEN—Every one engaged in equine practice must at some time or other have been consulted with reference to a remedy for a mare whose vicious propensities at time of œstrum have made her a source of danger to men and animals passing her hind-quarters. Plenty of hard work may ameliorate the condition, but it does not effect a permanent cure, and the animal can never be trusted. In some cases the source of the mischief lies in the fact of the ovaries being diseased, and their removal gives a certain proportion of satisfactory results. If a complete cure is effected by this means, a worthless, dangerous brute is converted into a useful valuable animal. The operation of spaying the mare was introduced about 1781, and, according to M. Gourdon, whose work on the castration of the domesticated animals is reviewed in *The Veterinarian* for 1861, it became so general in France that the Government had to forbid its indiscriminate performance. The flank method was adopted until the time of M. Charlier (about 1848 or 1850), when the vaginal method was introduced.

It is advised for mares when they are continually in œstrum and vicious, as they are a constant source of danger, and cannot usually be made to put on flesh. In the case of racing and hunter mares it is practised in America because they are said to become more docile and more easily managed when in contact with other horses; they are said to keep in condition more easily, and, in the case of racing mares, to become much more certain to run to a finish. The vaginal method of operating is incomparably the best, as it is attended with less risk both at the time and afterwards. The operation should not be done, if it can possibly be avoided, when the animal is in œstrum or if she is in foal, and, in connection with this, I may remind you that nymphomaniac mares do occasionally get in foal and yet still show "use."

For a couple or three days beforehand the diet is limited, and no food is allowed during the preceding twelve or eighteen hours. The under surface of the tail, the perineum, and lips of the vulva are cleansed and disinfected (if the mare will permit it) about an hour beforehand. The rectum is emptied by an assistant (the bladder too, if much distended) and the vagina thoroughly syringed with some antiseptic of reliable strength about half an hour before the operation commences.

The instruments required are a knife with guarded blade, an écraseur with an extra long stem, and a couple of chains in case one gives way. They are rendered antiseptic by boiling, being placed direct from the boiling water into solution of creolin or other antiseptic ready for use.

As regards position of the patient, the operation may be done whilst the animal is standing or after she has been cast. The latter makes matters a little more difficult on account of the compression upon the abdomen and the consequent pressure of the intestines into that part of the peritoneal cavity in which the operator's hand has to work. For the standing posture

stocks are admirable, although I have seen the operation done without when the animal has been completely narcotised with chloral hydrate. The method of fixing in the stocks includes the securing of the legs in such a way that kicking is impossible, and the application of a sling so that the mare cannot lie down. The twitch is used as a means of restraint, and a full dose of some narcotic, such as morphia, chloral, or cannabis indica, given to lessen sensibility.

For the recumbent position either the usual casting rope or hobbles may be used, and chloroform given as the anæsthetic. The ordinary hobbles are the best, as the ropes cause an undesirable pressure upon the abdominal contents.

Having secured the patient and administered the anæsthetic or narcotic, the operator passes his right hand, which has been thoroughly scrubbed and rendered as far as possible surgically clean, into the vagina and removes the antiseptic fluid, wiping the interior of the walls with antiseptic wadding to make sure that every part has been disinfected. The hand is then withdrawn and reintroduced, holding the knife with the blade guarded. The cutting edge is held against the part of the vagina which is to be incised and the guard cautiously withdrawn, and by a sharp plunge-like movement forwards a puncture large enough to admit one finger is made directly into the abdominal cavity. The position chosen may be either above or below the *os uteri;* the latter is usually recommended, but I have up to the present done it above the *os*, as in the cow, with the idea that the hernia would be less. The knife is allowed to fall on the vaginal floor, and the fingers are introduced one by one until the wound is torn of sufficiently large size to admit the whole hand. The ovaries are sought for underneath the loins, immediately behind the kidneys, not forgetting that they may be cystic and larger, or cirrhotic or smaller, than when healthy. Care must be taken not to confound them with the lumps of fæces in the bowel, these being distinguished by the facts that they are multiple (whilst the ovaries are isolated), that the lumps follow one another in close succession, and are softer to the touch than the tissue of the ovary. Any further doubt, too, may be cleared up by feeling along the horns of the uterus until the ovary is reached.

Having thus found the ovaries, the écraseur, with a small loop of chain protruding, is taken in the left hand and passed into the vagina along the right arm. The chain is manipulated until it is passed over the ovary, and the pedicle of the latter is slowly crushed through. The chain should afterwards be left on for about a minute after the ovary has been taken away, and then gently removed. Traction on the ovarian pedicle is to be avoided as much as possible, and the ovaries taken off within the abdominal cavity; it is not possible in the generality of cases to first withdraw them into the vagina as in the cow.

After the operation the animal is put into a comfortable, clean, loose-box and kept on laxative diet for a few days, the vulva and perineum being sponged and occasionally with disinfectants. In a week or ten days, if all goes well, she may be considered out of danger.

Accidents and Sequelæ.—(1.) The result immediately noticeable after the operation is violent straining for at least ten or twelve hours; it has been known to occur so violently as to cause hernia of intestine through the vaginal wound, and even through the vulva. (*Le Bulletin Vétérinaire*, No. 58).

In the particular case quoted it fortunately so happened that the operator

was performing ovariotomy upon another mare at the same place, and so had not gone away; the herniated intestine was returned and the animal made an uneventful recovery. As a rule the straining needs no medicinal interference and passes off after ten or twelve hours. If it does not do so the administration of anti-spasmodics, such as morphia or cannabis indica, may be resorted to at discretion.

(2.) Accidental injury to the posterior aorta or one of the abdominal organs. This must be guarded against when making the initial puncture.

(3.) Internal hæmorrhage. To avoid this the chain must be kept on this pedicle for a least a minute after the ovary has been removed.

(4.) Pelvic abscess, which may be due to infection at time of operation or subsequently. Strict attention to antiseptic precautions with reference to instruments, one's hands, and the vagina, are all that one can do to prevent this. When occurring, the abscess must be lanced from the vagina and treated antiseptically.

(5.) Peritonitis is usually manifested, if at all, between the third and sixth days. Probably this is always more or less present, but if nothing serious shows itself in the appearance of the animal before the third, fourth, or fifth days, one may justifiably surmise that there will no trouble from this cause.

Attention to antiseptic precaution and care against excessive injury and laceration when operating are the main steps to take to avoid this.

As regards ultimate results, statistics on the subject seem to show that the operation is not always a complete cure, but that it is well worth a trial when other means have failed.

In old mares it must not be forgotten that the habit of kicking is much more difficult to eradicate than in young ones, and it may be so firmly established that the habit will remain for some time although the actual cause has been removed; however, one must not despair of the habit being cured until at least six months has elapsed.

At the Plymouth meeting last August, Mr. Lukes, M.R.C.V.S., who has been practising in America, told the members of the National Veterinary Association that he had operated about twenty times without any accident, and with most satisfactory results; he stated that the operation was especially valuable for racing mares.

In one of the foreign extracts in *The Veterinary Record* of September last year there was a summary of sixteen ovariotomies performed by M. Schwendimann for the Swiss Government upon vicious mares. The results were encouraging, and were summarised as 43 per cent. of complete cures, and 25 per cent. partial.

In *The Journal of Comparative Pathology and Therapeutics* for 1889 there is a description of the operation as performed by Professor Cadiot, of the Alfort Veterinary School, upon two vicious mares, but although the animals recovered without showing any constitutional disturbance, the result upon their tempers was not satisfactory.

Mr. Henry Gray, of South Kensington, tells me that he operated upon a vicious mare about four years ago, and that she made a good recovery. Her future career as a cab mare was traced for two years, during which time she did not relapse into vicious habits and worked satisfactorily.

My own experience is at present too limited to speak definitely; each case makes one more towards gathering statistics upon which to base one's own opinion, and I shall await with interest the report of your Secretary and Mr. Woods as to the effect produced upon the mare we have operated upon to-day.

DISCUSSION.

Mr. ABSON expressed his great indebtedness to Professor Hobday for his practical demonstration and paper. He was particularly struck with the antiseptic precautions taken with the operations. In the operation on the cryptorchid, he noticed the Professor took the precaution to stitch up the outer wound, but could not very well stitch up the wound in the mare whose ovaries were removed on account of its position. It might, however, be assumed that the chances of infection through the vagina were not nearly so great as if the wound had been external, especially after having the vagina so very well disinfected as it was. He was considerably interested in the operations, which he had never seen before, and would anxiously await the result of them. Supposing the ovary accidentally left the operator's hands in the abdominal cavity, would there be much trouble in recovering it again?

Mr. STOTHERT asked Professor Hobday if he had much difficulty in getting the écraseur chain on the ovary after introducing his hand in the peritoneal cavity.

Mr. FAULKNER said that those witnessing the operations had done so with much pleasure and instruction, and they would watch very closely the results. The operations were most skilfully performed, and the extreme care taken by Professor Hobday to have cleanliness and the parts aseptic was in itself a lesson. After the able instruction derived from the Professor, no doubt some of them might feel encouraged to perform the operation should it come in their way. He tendered his thanks to Professor Hobday, who was always welcome at the Lancashire meetings, and it was gratifying to see him, so young a member of the profession, rapidly coming to the front.

Mr. HENRY HALL, after tendering his obligation to Professor Hobday, remarked about the simplicity of the operation, whereas he had been led to understand that there was a good deal of cutting and slashing, also stitching up. Though the Professor had not come across a case in which the ring was too constricted to put his hand in, what would he do if he found it necessary to cut the ring?

Mr. CLARKSON inquired whether there was any difference in the matter of operating on the mare and on the cow. He presumed the same method was adopted.

Mr. HOPKIN asked whether, in operating upon the cryptorchid when the testicle was in the abdominal cavity, there was any liability to hernia if the bowel came down, and whether the tight drawing of the sutures was intentional or desirable.

Mr. WOODS thanked Professor Hobday for his practical demonstrations and paper, remarking that he was absolutely certain the temper of the mare in question was entirely governed by the condition of the ovaries. The operation was most skilfully performed, and if the animal lived, and he did not see why she should not, his opinion would no doubt be confirmed, and they would know whether the operation was a success or not. With respect to the cryptorchid case, he would like to know from the Professor whether it was a somewhat difficult operation in view of the testicle being, as it appeared to him and many of the members, rather deeply seated in the abdominal cavity, or whether it was about the usual operation for a cryptorchid. The antiseptic precautions taken by Professor Hobday were indeed praiseworthy.

The PRESIDENT complimented Professor Hobday upon his splendid and instructive operations. There was no doubt that he was a specialist in abdominal surgery—he was their Lawson Tait in veterinary surgery. In all surgery, the President thought, the great thing towards success was absolute cleanliness and thoroughly antiseptic precautions. This fact could not be reiterated too often.

Professor HOBDAY, replying, said that with regard to the abdominal wound in the cryptorchid case he did not know that there was any fixed rule for stitching up the outer wound. If the testicle could be reached without inserting the hand completely into the abdominal cavity, there was little fear of the intestine coming down.

As to the vaginal wound in the mare, it would be difficult to find on the day following the operation, in fact after the lapse of three days he could almost guarantee that nothing beyond a little thickening could be traced.

As the ovary was firmly held in the hand, and had to be pulled off before it could be entirely removed, he did not think it likely that it could slip into the abdominal cavity. Even if this accident did occur, he should not be afraid of any serious consequences, provided his instruments and hands were surgically clean. Probably the ovary would, in time, become absorbed.

The method of manipulating the chain over the ovary was, perhaps, a little awkward, but they would soon get accustomed to it.

Respecting Mr. Faulkner's remarks that excessive care was used in the operations, he (Professor Hobday) really thought that if success was to be obtained in operations—especially in serious ones affecting the abdomen—it was absolutely necessary to have everything surgically clean before commencing.

With Mr. Hall, he agreed that each operation was sublimely simple. The chief difficulty to his mind was the bracing up of oneself to make a start. If the ring was too constricted to admit of the hand being inserted, although he had not yet met with such an instance, he would prefer to leave the ring alone altogether and make an entrance at the side through the abdominal muscle. By this method the wound closed much more readily than at the ring.

Replying to Mr. Clarkson, the operation on the cow was simpler than that on the mare. In the former operation there was practically no danger of being kicked.

Mr. Hopkin had asked whether the sutures had been rather tightly drawn intentionally. They had. He did not know of any object in leaving them slack, and it was better to draw them tightly.

The removal of the ovaries in animals did not unfortunately always prevent œstrum, though in the majority of cases it did. He hoped that in less than six months a good effect on the mare would be observable. They should not despair for that time as the animal was an old one, and the habit of kicking might be difficult to eradicate.

The cryptorchid operation in this instance was not one of special difficulty. He had met with easier and with harder cases. The delay to-day was due to the testicle being entangled in a portion of the omentum, and the difficulty was to get a firm hold of it through that bit of omentum. Concluding, Professor Hobday emphasised the precaution of using boiling water for the instruments.

ENORMOUS LIPOMA IN A HORSE.

THE following account is interesting in more ways than one. It proves first of all the enormous development which certain neoplasms may acquire when they are not disturbed in any way in their progress; it shows also that a neoplasm justly looked upon as harmless, and showing no tendency to recur, may for all that cause the loss of an animal either by thwarting certain physiological functions, or by assuming such a size that it is found impossible to make use of the animal.

A light draught gelding of dark colour, about 16 hands in height, and eight years of age, was sent to the hospital to have a tumour situated in the right flank removed. By direct exploration we ascertained the presence of an enormous tumour, extending downwards from the transverse apophyses of the lumbar vertebræ to the level of the knee and the fold of the groin, and, from back to front, from the external angle of the ilium to the hypochondria; the tumour was lumpy on the surface, insensitive to pressure, and presented to the touch a fairly firm consistency in the top part, and was soft, almost fluctuating, in the lower part. At no point did we perceive œdematous consistency. In order to give some idea of the extent of this anomaly, we may state that from top to bottom it measured 36 inches, from back to front 17 inches, and in thickness 18 inches. The last measurement was taken after the subject had been slaughtered.

We possess practically no information as to the manner in which the tumour arose. The proprietor informed us, however, that it began to appear about six years ago, when the subject was still a colt. He thought that at that time the colt had sustained contusion by running against a fence-post. Since that time the tumour had grown slowly; it was only latterly that the proprietor fancied he noticed a slightly faster growth.

The tumour was situated on the trajectus of the abdominal wall, and although it did not give us at any point the sensation of a hernia, we were not sure of this; so in order to make sure that there was no hernial injury, we made a rectal exploration, which allowed us to find out that the abdominal wall did not present any solution of continuity corresponding to any point to the tumour. This exploration showed us likewise that the neoplasm bulged out in the interior of the abdominal cavity all along the right flank.

The first question was to determine the anatomical nature of the tumour. Considering that it had developed slowly, that it was insensitive to pressure, that it had not occasioned any neighbouring gland lesion, that it presented at several points a very soft but not fluctuating consistency, we presumed that the tumour was probably harmless, and of a fatty nature; in the top part we probably had the fibro-lipomatus consistency, in the lower it came nearer to the soft lipoma.

There remained one obscure point: What was the starting-place of the neoplasm? Did it only exist in the subcutaneous adipose cellular tissues, or had it really filled the interstices of the muscles of the flank? It was not easy to give a reply without operating. In spite of the large wound to be made, we decided that it was worth while to attempt the operation, which would enable us to complete the topographical diagnosis, and at the same time to remove the tumour.

After placing the horse on its left side, the whole region affected by the

tumour was shaved and carefully disinfected. We made, towards the middle of the tumour, and from top to bottom, a double incision in the form of a slice of melon. We then dissected the subcutaneous cellular tissue with hooked fingers: This was easily accomplished on the back part of the tumour. The front part was not so easily managed: at this part the skin showed traces of irritation caused by the shafts of the waggon, and this had caused a very pronounced condensation of the subcutaneous cellular tissue. The dissection had thus to be made by the scalpel. At the end of some minutes we had exposed the top part of the tumour. Unfortunately at this moment we discovered that the neoplasm had insinuated itself into the muscular planes, so that in order to get at its internal face we had to cut open the external obliquus abdominis. This top edge having been dissected, we penetrated easily enough to the internal face of the tumour, and were enabled to ascertain to our regret that our hands were only separated from the abdominal organs by the transverse fascia and the peritoneum. The removal of the neoplasm was thus practically impossible, the latter affecting all the muscular planes of the flank. In consequence we stopped the operation, and advised the slaughter of the animal. This advice having been adopted, we gathered the tumour together, and were thus enabled to verify the diagnosis which we had made.

The tumour weighed 84 lbs., and really consisted of almost normal fatty tissue. It was only in the lower part that we could ascertain that the adipose tissue was very soft. By making a transverse section of this enormous mass, we observed that the fatty substance was disposed in several layers, separated by the muscles of the region. Going from the inside outwards, we found first the peritoneum covered by the transverse fascia and a fatty layer of at least 3 inches. We then came to the transverse muscle separated in its turn from the internal obliquus abdominis by a fatty layer of about 4 inches. Between this last muscle and the external obliquus abdominis we found another adipose layer; and on the outside face of the external obliquus abdominis a final fatty layer extending right to the inside of the skin.

One remarkable fact, which goes to prove the connection existing between these layers of fat, consisted in the presence of innumerable fatty bands, which traversed the substance of the different muscles, and thus formed a proper connection between the neoplastic planes.

(*F. Hendrickx, in the Annales de Médicine Vétérinaire.*)

COW CASTING ONE CALF AT FIVE MONTHS AND CARRYING ANOTHER FULLY NINE.

BY HY. THOMPSON, ESQ., ASPATRIA.

A THREE-YEAR-OLD white shorthorn heifer, the property of Mr. John Mossop, Wodow Bank, Egremont, Cumberland, was served by a black bull, and was due to calve on the 7th October. On the 3d of June she cast a calf, and on this account was pushed forward for fattening, but on the 6th of October—the day before she was said to be due—she calved a full-grown, fine, healthy, blue-gray heifer calf. Both mother and offspring are doing well. This is not of frequent occurrence, but occasionally happens.

TESTING THE TUBERCULIN TEST.

THE Cheshire County Council has issued a report on a series of experiments which have been carried out at the County Council farms by way of testing the reliability of the tuberculin test. From this report we give the following extracts, which show the character and extent, and also the result of this investigation work.

The testing of the animals with tuberculin was placed in the hands of Mr. Laithwood, F.R.C.V.S., chief veterinary inspector of the county of Cheshire. The *post-mortem* examination of the slaughtered animals was undertaken by Mr. Laithwood, assisted by Mr. King, chief veterinary inspector for Manchester, and Mr. Storrar, veterinary inspector for the city of Chester.

THE HERDS EXPERIMENTED ON.

1. The herd at the Dairy Institute, Worleston.

This consisted of fifty-four cattle, containing one high-class pure-bred shorthorn bull. The cows in this herd may be described as the farmer's ordinary shorthorn, with one pure-bred Jersey, and a few cross-bred cattle from Welsh and Irish. A number of the animals had been bred upon the farm, but the majority had been purchased as required in the neighbourhood, and at the markets in Crewe and Chester. The cow-houses at Worleston were, until 1898, very inferior, being low and deficient in air-space, and wanting in light and proper ventilation. In the spring of 1898, however, the shippons were remodelled, and accommodation provided whereby each animal has an air-space of 378 cubic feet. Light and suitable ventilation are, however, still wanting. A plenteous supply of good and pure water is provided. The land on the farm is entirely grass, on a heavy clay subsoil. The cattle were well fed, receiving some amount of artificial food throughout the whole season of milking; the production of milk being the one great object aimed at. Cattle that failed to milk satisfactorily had been from time to time weeded out, and their places filled with others, while specially heavy milkers had been kept on from year to year. Hence the herd contained a fair proportion of aged cows and heavy milkers. The majority of the cows were due to calve in the early portion of the year, though the herd contained some that had calved in the autumn and winter. Hence the herd may be classified as a typical farmer's stock, such as abounds throughout the county, and kept under circumstances and in buildings similar to those ordinarily existing.

2. The herd at the Agricultural School, Holmes Chapel.

This consisted of seventeen animals, containing one high-class pure-bred and young shorthorn bull. The herd contained two Jerseys, one of which had been purchased from Bucks, and the other bred on the farm. Two other cows were well-bred shorthorns: the others cross-bred. Almost all the animals were comparatively young, as the cattle here are often fed off, and consequently the stock is changed from time to time. The land on this farm is a clay loam, and the cow-houses are exceptionally good, being well lighted and ventilated, and each cow having an air-space of 510 cubic feet. A good supply of water also here exists; the cows, too, are well bedded in the stalls with straw, and special attention paid to keeping them clean and tidy.

THE TESTING.

In testing the cattle, a dose of 3 centimetres of tuberculin was used, though this amount was varied a little according to the size of the animal. The insertion of the tuberculin was made, in most cases, a few inches in front of the shoulder joint, and in the remainder immediately behind the elbow. It is considered equally reliable in either situation, but Mr. Laithwood prefers the former, it being slightly further removed from the hind foot.

The tuberculin used was obtained from Professor M'Fadyean, of the Royal Veterinary College, London, who guaranteed it to be of *recent* make, and *reliable*, and *his own preparation*. It is well known that if tuberculin is old, or turbid in colour, it becomes unreliable.

The temperature of each animal was carefully taken before injection to obtain the normal temperature, and then taken after injection at regular intervals up to a period of fifteen hours after injection. It was considered that any rise of temperature after fifteen hours from injection may not be due to the effects of the tuberculin. Thus Professor M'Fadyean says, "I do not think it is necessary to take the temperature after the fifteenth hour."

In classifying the animals, as a general rule, those which did not rise above 103° were considered "healthy;" if over 103 and under 104° as "doubtful;" if 104° or over as "tuberculous." Several other things, however, have to be taken into account, such as the normal temperature, age, temperature of house, if recently brought in, if recently had cold water, or been fed, &c. &c., and of course parturition.

At the same time the udder of each cow that reacted was carefully examined to see if any deviation could be detected from what should be its normal condition, or any indication that would point to an unsound or indurated udder.

Summary of Results of Testing.

	At Worleston.	At Agricultural School.	Total.
Number of animals tested, - - -	54	17	71
Number declared free from tuberculosis, -	37	13	50
Number declared affected with tuberculosis,	14	3	17
Number declared doubtful, - - -	3	1	4
	54	17	71

One udder only found indurated.

Taking, therefore, the Worleston herd, in which were 52 cows and heifers in calf or in milk, and 2 bulls; it was found subsequently that all those marked doubtful, except 1, were tuberculous. Thus we have 38 healthy and 14 tuberculous, or a percentage of tuberculous animals equal to 27.

This showed the stock to be undoubtedly more free from tuberculosis than what has been stated as the average condition of dairy herds.

In afterwards replacing the animals slaughtered, cattle were only bought after being submitted to the test and not reacting, and of those so tested it was found that of thirty-one tried eight reacted or were doubtful, or a percentage of twenty-six.

It was determined to slaughter a large number of those that had reacted, and by careful *post-mortem* examination proved the presence or otherwise of tuberculosis, and thus the reliability or otherwise of tuberculin as a means of diagnosing the disease. Hence eight animals in the Worleston herd and two in the Holmes Chapel herd were straightway sent to be slaughtered, while the other doubtful ones and those that had reacted were kept for further experiments. The animals so kept were isolated from the rest of the herd in a separate shippon specially disinfected before they were placed therein. The whole of the shippons at both places were thoroughly disinfected by means of the Equifex spray.

The *post-mortem* examination of these reacting animals showed that every one of them was affected.

Samples of milk (from the reacting cows) were sent to Professor Delépine, Manchester, to be analysed bacteriologically, and to be tested by inoculation.

The milk of none of the animals affected with tuberculosis was found to contain tubercle bacilli except one, which was drawn from a remarkably healthy-looking animal.

ANIMALS RETAINED FOR FURTHER EXPERIMENTS.

The other reacting and doubtful animals were retained for further experiment, and were retested six weeks thereafter, and twice again in the following month at intervals of a fortnight, in order to see whether they would cease to react as the result of repeated inoculations. It was considered that the experiments showed either that a larger dose than three centimetres of tuberculin or more frequent injections than four in ten weeks were necessary to bring about a state when the tuberculin would cease to cause a reaction in the animal. Hence on the next occasion, namely, 27th April, 3·8 centimetres of tuberculin were used, with the result that the six animals either did not react at all, or only slightly. After further testings, these animals also were slaughtered, and found to be affected with tuberculosis.

CONCLUSIONS TO BE DRAWN.

The above experiments show clearly the reliability of the tuberculin test as a diagnosis of the presence of tuberculosis in an animal. The amount of reaction, however, does not appear to be any index to the extent of the disease or the degree of infection. Tuberculin, indeed, is at present the only reliable method of testing for the disease.

Further, it appears that continuous injections of tuberculin at short periods of time will cause reaction to cease in an animal that has previously been shown to be tuberculous.

This points to the great necessity for stringent restrictions being placed upon the sale of tuberculin, and that only duly accredited persons, such as veterinary surgeons, should be allowed to purchase or use it.

The Royal Commission on Tuberculosis, and indeed all veterinary surgeons, are agreed that tuberculosis is not hereditary. Two striking examples in testimony of this were produced in the testings. The cow No. 6, which was probably as bad a case as any, is the mother of the bull No. 1—a healthy and sound animal of fourteen months' old. Again, cow No. 22, which was tuberculous, is the daughter of another cow in the herd who is sound, and did not respond to the test.

(*North British Agriculturist, 27th Dec.* 1899.)

PARALYSIS OF THE TAIL AND OF THE SPHINCTERS IN A MARE.

THE interesting case described by M. Raymond and M. Cadéac in the *Journal de Méd. Vét. de Lyons* (see VETERINARY JOURNAL for November) is our excuse for giving another. M. Cadéac said that his case has for origin a limited sclerotic affection of the spinal column in the region of the tail. He adds, "This sclerosis of the coccygeal region constitutes a clinical type well defined by triple symptoms absolutely characteristic; inertia of the tail, involuntary expulsion of the excreta, and escape of the urine." In the *Encyclopédie Vétérinaire* M. Cadéac says, "It is not uncommon to see paralysis of the tail and the sphincters follow a fracture of the caudal vertebræ." In the following lines we wish to show that there are two affections presenting absolutely identical symptoms, and yet having different origins; in the one case there is a sclerotic lesion of the spinal cord, in the other a wound has been caused in that organ. In the latter case it might quite well happen that the practitioner, failing to observe the wound lesion, might—overturning M. Cadéac's conclusion—make an error in diagnosis which would be very serious if the matter came before a law court.

Some two years ago a Belgian horse-owner purchased in England a blood-mare, chestnut colour, three years' old, which had run in several races with a certain amount of success. The low price had certainly put the Belgian purchaser on the alert, but as he could find nothing abnormal in that animal physically, he decided to bring her over to Belgium. A few days after her arrival we were called in to examine her, the owner having noticed that the urine trickled away frequently in a tiny thread. We observed the following symptoms:—General condition satisfactory, pulse, respiration, appetite normal; the action of the mare at a walk was natural, but certain treads were accompanied by a slight expulsion of urine. The hair of the tail, which was very long, was soiled by excrement and partly stuck together with urine. On raising the tail to explore the rectum and the vulva, we noticed that it was quite inert, and that the animal made no resistance to our raising it; we could turn it in any direction we liked. Pricks with a needle all over the coccygeal region, and even on the hinder part of the croup, produced no reaction. This was not the case on the lateral parts of the croup, nor over all the extent of the hind-legs; sensibility seemed to be entirely preserved in these parts. It is to be noted that there was no apparent malformation of the region of the croup nor any appreciable trace of any wound. The anal sphincter was relaxed, the anus flaccid, and rectal examination could be performed without any resistance from the sphincter or contraction of the muscular part of the rectum. The anal mucosa and the skin round the anus were totally insensitive. The vulvar sphincter was likewise relaxed, and the vulva gaped more or less. On introducing the fingers into the urethral canal one could note the complete paralysis of the neck of the bladder. The pelvic cavity, carefully explored through the rectal walls, presented no lesion of a nature to compress the nervous cords which innervate the sphincters or the base of the tail.

The origin of the affection being quite unknown to us, we could only make the following diagnosis:—Paralysis of the tail and sphincters, arising

from spinal injury situated behind the commencement of the lumbo-sacral plexus. The outlook was very serious, but, the case being an interesting one, the owner agreed to send the mare to the infirmary of the Veterinary College. For several months we tried various medicaments, but quite without success; the condition of the mare remained absolutely stationary. At last, there being no hope of cure, the animal was destroyed for dissection purposes. To our great regret this happened in our absence, and we were unable to make a minute *post-mortem*, but one of our assistants having prepared the skeleton, we found on the sacrum a lesion sufficiently characteristic to account for the symptoms. Examined as a whole, the sacrum presented a slightly broken aspect at the point of the second vertebral body. Looking at its upper surface we saw as sole anomaly a slight bulge in each super-sacral channel at the base of the second spinal process. The lower surface, on the contrary, showed quite clearly traces of a fracture of the second vertebral body. This had been, so to speak, smashed up, and a part of its spongy mass thrust into the vertebral canal. The two sub-sacral cavities were almost entirely obliterated. The neural canal was almost completely filled up with bony substance pushed back under the base of the second spinous process. We thus learned that there had been a complete fracture of the sacrum at the level of the second vertebral body and of the ringed part comprised between the second and third spinous process; this part had joined together again without producing any marked callosity. It was thus evident that there had been complete compression, followed by section, of the spinal cord and of the nerves of the tail. Thus all the organs situated under the control of the posterior spinal nerves were struck with paralysis. The super-sacral nerves, taking their rise behind the fracture, as also the coccygeal nerves, were consequently deprived of all nervous conductibility. The lumbo-sacral plexus was bound to show degeneration lesions, as its last branch of origin was completely cut through; but the great nerve-trunks which rise from this plexus were not found to have fatally lost all nervous conductibility; there was in reality no well-marked functional disturbance in the hind limbs. This was not the case with the two last sub-sacral nerve-pairs, that is, the pudicus internus and hæmorrhoidalis. These were certainly separated from the spinal cord, and this explains the paralysis and insensibility of these regions and of the perineum.

It is unfortunate to be able to give so imperfect an account of an autopsy, but it is interesting to notice that a complete fracture of the sacrum should have healed so well, without deviation and without any appreciable callus, and if in this case the cord had not been profoundly injured we may presume that the cure might have been complete.

The question may be asked, How did the fracture occur? If we take into consideration the predisposition to fractures of the osseous system of race-horses, a predisposition both hereditary and acquired by the severe dietary regimen to which these animals are subjected; if, on the other hand, we consider their special croup-formation (projecting and "spiky"), we may admit that an injury affecting the posterior part of the croup may easily have brought about a fracture of the sacrum. Of these injuries there is one which is pretty frequent in circus horses, namely, a fall backwards when they rear; then the whole weight of the animal may fall on the croup.

(*M. P. Rubay in the Annales Vétérinaires*).

ON THE MODIFICATIONS OF THE METABOLISM PRODUCED BY THE ADMINISTRATION OF DIPHTHERIA TOXINE.

DRS. NOEL PATON, J. C. Dunlop, and Mr. Ivison Macadam have made inquiries into the question of modification of metabolism produced by diphtheria toxine, and the following are the conclusions at which they have arrived :—

Under the influence of diptheria toxine in the dog—

There is no interference with the digestion and absorption of proteids.

There is a marked increase in the proteid katabolism, probably as a result of a direct toxic action on the protoplasm.

There is an interference with the elaboration of waste nitrogen into urea which leads to an increase in the proportion of nitrogen not as urea in the urine.

No marked increase in the proportion of nitrogen in ammonia occurs.

The excretion of uric acid is not manifestly modified.

The excretion of sulphuric acid is not increased proportionately to the increased excretion of nitrogen.

The total excretion of sulphur bears a fairly direct proportion to the excretion of nitrogen.

The neutral sulphur—sulphur not as sulphates—is increased, probably by an interference with its oxidation to sulphuric acid.

The absence of an increase in the formation of sulphuric acid probably explains the absence of an increased formation of ammonia.

The diminished elaboration of sulphur into sulphuric acid appears to be connected with the diminished elaboration of nitrogen into urea. Both are probably due to an interference with the hepatic function similar to that already demonstrated to occur in febrile conditions in the manufacture of the bile constituents.

The excretion of phosphorus is not increased.

The proportion of phosphoric acid to nitrogen is markedly diminished. This would seem to indicate the absence of any increase in the katabolism of nucleins as compared with other proteids.

The absence of any relationship between the phosphoric acid and the nitrogen not as urea seems to militate against the view that the purin bases which contain part of that nitrogen are necessarily derived from nucleins.

There is no marked alteration in the proportion of potassium and sodium such as was observed by Salkowski in febrile conditions in man. This may possibly be explained by the different distribution of the two bases in the red blood corpuscles of man and of the dog.

The excretion of chlorine is markedly diminished both actually in proportion to the excretion of nitrogen and to the excretion of sodium and potassium.

This alteration in the proportionate excretion of chlorine and of these bases raises the question of what is the nature of the chlorine compounds of the tissues, and suggests that in the body chloride of sodium may be split up elsewhere than in the gastric mucosa.

The question of what acid takes the place of hydrochloric acid in combining with the bases in the urine is not elucidated.

(*Journal of Physiology, July* 28, 1899.)

FIBRINOUS TUMOUR IN MARE'S HEART.

BY HY. THOMPSON, ESQ., ASPATRIA.

THE following may, I think, be interesting. On the 4th October I was called to see a hackney mare, nine years old, said to have been taken suddenly ill in the shoeing shop while the smith was dressing one of the fore feet. The mare suddenly reeled to and fro for a few times, then fell over on to her side and struggled for a time as if in a fit, this gradually subsided, and the mare got up, but was very unsteady. After a while another attempt was made to finish the foot, when she had another attack. After she came to herself she was led quietly home (14 miles from here), and a dose of linseed oil was given her as a drench, but with great difficulty. I was sent for, and found the mare in a box standing hanging her head, and in a stupid sleepy condition; breathing was quick, pulse scarcely perceptible, eyelids dirty brownish-yellow colour and injected, temperature 101° F. The least excitement seemed to upset her so much as almost to cause her to fall over. On inquiring into the case, I found that she had been fed on *new oat straw* and new oats. As I have on many occasions known oat straw—particularly new unconditioned straw—cause constipation and liver complication, I considered the case to be caused by such dieting, and treated her accordingly. The bowels were very obstinate, but with small repeated doses of aloes, rhubarb, and soda, alternating with doses of hyposulphate of soda, the patient seemed to gradually recover, and on the 10th seemed convalescent and was feeding fairly well. The bowels were acting nicely, and walking exercise was ordered for one hour each end of the day. She went on well until the morning of the 23d October, when, on going into the box, she was found breathing with great difficulty, almost gasping for breath and perspiring freely. I was telegraphed for. On arrival I found that the paroxysm had passed off. The mare was standing looking very dull and not feeding, breathing easily, but about twenty to the minute; temperature normal, but the pulse was peculiar, beating very slowly—only twenty-eight to the minute; while the heart had a remarkable loud beat, but no intermission. There was no overlooking the fact that the heart was affected. I therefore ordered the following to be given every six hours:—

Pulv. digitalis,	.	℈ ij.
Amm. carb. .	.	ʒ iij.
Pulv. calumbæ,	.	ʒ ij.

Made into a ball for one dose. On the 25th the medicine was changed to iodide of iron, and on the 28th to carbonate of ammonia in 3-drachm doses every six hours, administered in cold hay tea. The mare grew gradually worse until the 30th, when she was found dead. On *post-mortem* a large fibrinous tumour was found firmly attached to the biscupid valve, extending into the left auricle, while fibrinous strings extended along the pulmonary veins. The amount of fibrinous material found at the auriculo-ventricular opening, in the auricle and in pulmonary veins, made it really astonishing how the mare had lived so long. From the 23d of October until the day she died the pulse grew slower and slower—28, 25, 22, 20—and the day before she died it only numbered eighteen beats to the minute. I never met such a case before, therefore think it worth recording.

CARDIAC PALPITATION CAUSED BY FEAR.

A BELGIAN mare, eight years old, had worked a whole morning without showing any peculiarity, when suddenly, startled by the sight of a cart covered with a large white awning, she became restless and began to jib. At the end of a few moments the animal grew calmer, but had a listless look, and was indifferent to all its surroundings. It kept its head hanging down, and was unable to resume its work.

When M. Kroon examined the mare, he noted that her heart-beats were so violent that they could be distinctly heard by any one standing beside her. On placing the hand on her back, the cardiac beatings were distinctly noticeable. The heart beat 62 to the minute, the two sounds of the heart being quite distinct; the breathing was slightly accelerated, the temperature normal, the appetite slight, and the mucous membranes slightly injected. M. Kroon diagnosed the cardiac palpitations as of nervous origin and inspired by fear. He administered in twenty-four hours 70 grammes of bromide of potassium. All the symptoms rapidly disappeared, and at the end of forty-eight hours the animal was totally cured.

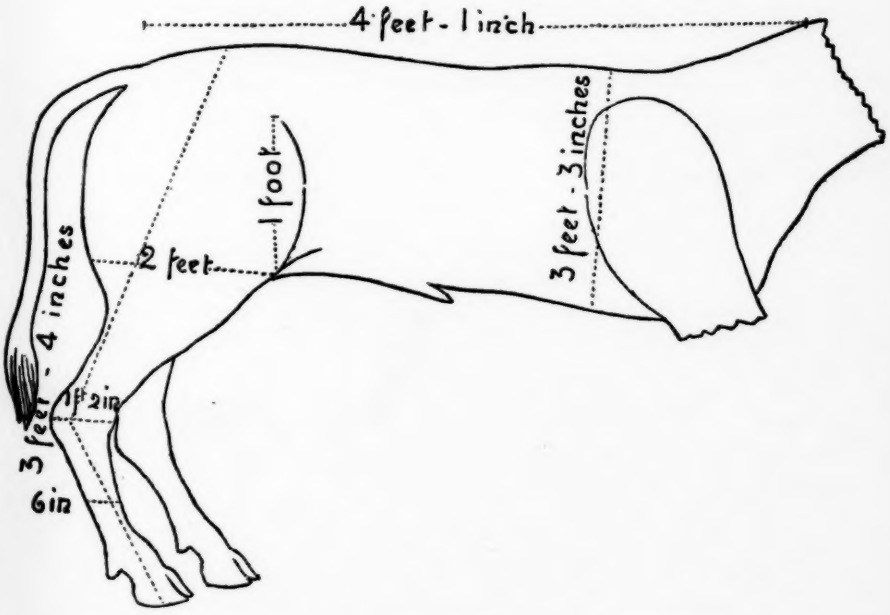
(*Tijdschrift voor veeartsenijkunde.*)

"CHUCKING UP THE SPONGE."

BY HY. THOMSON, ESQ., ASPATRIA.

THE following case may possibly interest some of your readers:—On Tuesday, the 29th August last, we had a call to a cow calving. As the case was in the town, my assistant, Mr. Joseph Lyons, attended to it, along with Mr. Frank Hopkin, veterinary student. About an hour afterwards I called in to see what was going on, and found Mr. Lyons hard at work. On asking him what was wrong, Irishman-like he replied, "Sure, and everything is wrong, I think. I have a grown-up bull inside of this cow to deal with, and it is a monster of a calf, and the head is twisted over the fore-arm of the left leg, while both legs are bent at the knees, and the right one back, and for the life of me can I get the head up into position, it is so big." I stripped and examined the case, and must confess, as Lyons said, the calf was a monster, and exclaimed, "It is no use dallying with this job, we must try to cut it away," and with the long hook knife the skin was cut along the shoulder of the left leg down to the middle of the shank, and the leg and shoulder as far as we could reach was skinned,—the pectoral muscles being cut through with the long knife, and the leg was pulled away. One hook was next put into the eye socket and another into the nose, and the head was got into position; but so large was it there was no room in the passage for the other leg. The head therefore was skinned back from the eyebrows to the first joint in the neck, and then cut off. The skin was then stitched over the end of the bone and a good stout cord fixed into it. The other fore-leg was now brought forward, and a long hook fixed into the left side and traction applied, but the fœtus would not move. The right fore-leg was then removed, the ribs were cut through and broken off. The contents of the chest and abdomen were all pulled out, hooks were fixed into the sides and neck, and steady pulling was tried. The fœtus was

moved a little forward. The cow all the time bore up splendidly, but as the strength of six stout farm-servants failed to pull the fœtus away, I had the cow fixed in position, put a chain round the chest of the calf, and tried to deliver with my chain blocks—a thing I had never done before. But no! the remains of the monster could not be removed. We had had between five and six hours of this dirty work, and, personally having only one arm to work with, we "chucked up the sponge" and slaughtered the cow. After the cow was killed and opened, the remains of a monster of a calf were revealed. I regret very much I did not get it weighed or photographed, but here is a rough sketch with dimensions :—



I measured another calf a week old, and here are the particulars of the two as a comparison :—

	Monster.		Week-old calf.	
	FT.	IN.	FT.	IN.
From tail to ears, - - - -	4	1	3	0
Girth, - - - - - -	3	3	2	6
Rump to foot, - - - -	3	4	2	7
Haunch to stifle, - - - -	1	0	0	9
Girth round stifle, - - - -	2	0	1	4
Round both stifles together, - -	3	1	2	3
Girth round hock, - - - -	1	2	0	$9\frac{3}{4}$
Round shank, - - - -	0	6	0	$4\frac{1}{2}$

Upon examining the skin, the long strong hair, and the largely developed feet, I asked the owner if the cow had not gone over her time. His answer staggered me. He replied, "She should have calved first week in July"—nearly eight weeks before—and the calf certainly looked as if this were the case. What is more, it was alive when we started with the case. The cow was aged, of the shorthorn type, well and deeply made.

Had we known at the first that she was nearly two months over her time, the cow would have been saved a great deal of pain, and we from sore bones and muscles. Strange to say, a fortnight after we had another case, showing the self-same presentation, and one month over her time. Both fore-legs and head were removed, and the fœtus was got away in about one and a half hours. In the first case the great obstruction was the big stifles sticking at the brim of the pelvis. The fœtus might have been cut through the middle, and the hind-quarter pushed back into the womb—but even then the symphysis pubes would have had to be cut through.

NON-CONTAGIOUS SKIN DISEASES OF DOMESTICATED ANIMALS.

BY W. GRAHAM GILLAM, M.R.C.V.S.

(*Continued from page* 55.)

Treatment.—We may treat this stage successfully. Keep the excretory apparatus in order by aperients and diuretics, salines, sulphur, iodide of iron, or potash. In the dog the syrupus ferri iodidi answers well; cod liver oil having an almost equally beneficent effect.

The external treatment is of great importance. Carefully remove the hair from the affected parts and wash with soap and water to which some carbonate of soda has been added, taking great care to have the parts thoroughly dried afterwards. Dilute iodine ointment often answers well, or an ointment of 1 part creolin to 7 or 8 parts of lanoline or vaseline. Very good results are obtained with ung. zinci and carbolic acid.

In the cases to which I referred, where the legs were affected, the dressing I found answered best was an emulsion of ol. picis, ol. olivæ, and lime water. If the skin is very tender dry dressings are indicated. Finlay Dun recommended zinci oxidi 1 part, bismuthi nitratis 1 part to 6 or 8 parts of kaolin or starch. A dressing I often use is made of sulph. precip. ℥ij, zinci carb. ℥j., ac. carbolic ♏xv., starch ℥v. This should be well triturated and sifted through fine muslin. Before application it is a good plan to slightly moisten the affected parts with glycerine, as this has the advantages of rendering the skin flexible and at the same time allows the dressing to adhere better.

Eczema—the Humid Stage.

This also has other names, such as simple eczema, moist eczema, humid tetter. When affecting the dog it is often called red mange. This term is considerably misleading, as it is not mange, mange depending on the presence of a mange parasite.

This is the form of eczema which is most common in the dog, at least

they are generally suffering at this stage when the practitioner's attention is called to it.

The inflammation here is of a more extended character, and there is a much greater amount of exudation. It generally affects the back, neck, and shoulders of the horse. In the dog between the thighs, under the arms and abdomen, and neck. The lesions of moist eczema are not usually of such dimensions as in some forms of mange, but are as a rule localised to patches averaging from the size of a shilling to that of a florin. We get the formation of successive crops of vesicles, which as soon as they are formed burst and discharge their contents on to the surface. This fluid being of a strongly irritating nature, increases the area of the lesion. The vesicles are frequently so closely aggregated and so numerous that they give the appearance of a large extended vesicle. The animal suffers from intense pruritis, which is often materially increased by the presence of lice, if the animal's surroundings have been of a dirty character. This itching is manifested by the poor brute rubbing, scratching and biting the affected parts; it continues to do this, until the superficial layers of the skin and hair are rubbed off, which leaves an angry-looking wound, the skin being red, raw and inflamed, and one frequently has very formidable lesions to deal with. The exudate, a sanguineous discharge, dries into "scabs" of various sizes. One is liable to mistake this for "scab" in the sheep, but to make a positive diagnosis of scab the parasite must be found.

Mr. Woodroffe Hill in his book says that sporting dogs are more liable to become eczematous than others; though why I fail to see. In two years' continuous experience with a pack of hounds, I may say I have had but one case of eczema and this but very slight. There seems to be no doubt that one attack predisposes to another, and attack after attack establishes a chronic case.

Treatment of Moist Eczema.—The previously mentioned internal treatment should be adopted here, paying particular attention to the animal's constitution and idiosyncrasies with regard to certain forms of diet. In dogs in particular, the animal is either in an exceedingly obese condition, or in a debilitated and wasting one. Treat the former by withholding food for a time, and the latter by good diet, ol. morrhuæ, and mineral tonics. Liq. arsenicalis for the dog answers well, or Fellowes' syrup.

In the horse, keep the bowels lax. It seems to be a recognised fact that watery dressings are contra-indicated in this form of eczema, and more often than not aggravate it. But on the other hand it is often absolutely necessary that the part should be gently washed, to free it from scabs, dirt, loose hair, and any irritating discharge that may be present. This should be done with warm water and a non-irritating soap. Oily or greasy dressings seem to answer best. Olive oil and lime water, or an emulsion of lime water, olive oil and creosote, zinc ointment, or ung. hydrarg., which must be dilute. When affecting the eyelids use ung. hydrarg. nitratis, and for the face and lips, boro-glycerine or glycerine of tannin. In sheep, remove the hair from the affected area, and apply tarry dressing or vaseline and creolin. Dry dressings are of great value in a great many cases in the dog, particularly where there are raw patches. These patches may be also lightly brushed with a 5 per cent. solution of argent. nit. Where possible carefully remove the hair, and apply any of the previously mentioned dusting powders; cover the spots with oiled lint, and over this a coat to prevent the animal from scratching or biting it. One may get a deep sore,

which refuses to heal. I have tried ung. calendulæ for this, and found it answer well.

Eczema—Pustular Form.

Also known as suppurative eczema, impetigo, or impetiginous eczema.

This form of eczema in a good many respects resembles the vesicular form, except that the inflammatory processes have gone on to suppuration. The inflammation has also extended somewhat deeper into the skin. It is characterised by the presence of pustules on the skin, scattered singly, or in groups which have a tendency to become confluent. The pustules after a time burst and discharge their purulent contents on to the surface, this dries and forms scabs, which when rubbed off leave a raw surface. These scabs if not rubbed off remain on until the excoriated skin is healed. The eruption of these pustules is successive, and we get crop after crop, thus prolonging the disorder. It is often seen on the face and lips, and then known as crusta facialis or labialis. This face and lip affection is generally put down (in herbivora) to eating irritating food. Those plants rich in oxalates, as young clover, vetches, &c., rank grasses, such as those grown in orchards, and plants affected with fungoid disease; cakes adulterated with mustard seed; it has been observed in young stock, from eating over-fermented ensilage, and it is often a sequel to the previously mentioned forms.

Treatment.—When traceable, remove the cause, and give less irritating food. Give dry food instead of green meat. Any emollient ointment answers for the face and lips. In one or two instances I have seen it affecting the backs and necks of young horses; these were young animals brought from country into town, they had been on grass, and it was probably due to change of food and surroundings. They were given ℥j of mag. sulph. twice daily in the drinking water. The pustules were softened with hot water and thoroughly dried, then I applied some ung. resinæ, made with lanoline, to each pustule, this seemed to temporarily increase the suppuration. In a few days the pustules burst, when they were washed with a dilute solution of carbolic acid, and after that an application of vaseline seven parts and creolin one part. Under this treatment they were soon free from the trouble.

"Grease."

There appears to be a doubt as to whether grease should be classed as an eczema, or as a distinct form of dermatitis caused by a parasite. If the hippodies glycophagus is the cause, I then think it should be classed as a mange. Professor Williams say that the presence of this parasite while the horse is suffering from grease is quite accidental. Some writers say that it is the ordinary symbiotes equi. Continental observers on the other hand make no reference to any form of dermatozoa in this affection. As the lesions so closely resemble those of pustulous eczema, I shall deal with it here.

Grease, steorrhœa or seborrhœa is an eczematous form of dermatitis, principally affecting the sabaceous follicles and their neighbourhood. Characterised primarily by erythema and quickly followed by papules and vesicles, though these are rarely seen. We then have the formation of a crop of pustules and increased out-pouring of sebaceous material. The situations commonly affected are the skin at the back of the fetlocks, and

up the course of the flexor tendons; it more often affects the hind limbs. It frequently gets no further than this, if promptly treated, but more often than not it assumes a chronic form. In this, the out-pouring of exudate and sebum becomes continuous, evolves a very fœtid odour, and being of a strongly irritating character increases the area of inflammation. The discharge becomes thick and sticky, and mats the hair together; the skin becomes hard, dry, and cracks in some places, thus giving rise to great lameness. Masses of granulation now appear on the unhealthy sores, the papillæ become enormously hypertrophied, and covered by horny epithelial scales, easily rubbed off and exposing a highly vascular surface underneath. These excrescences are often spoken of technically as grapes. The sebaceous glands either pour out an excess of sebum, or the shut hair follicle becomes very much distended with its secretion, causing the hair to assume a very erect position. Seborrhœa in this form corresponds to acne of the human subject. When the disease has assumed this form, an excess of fibrous tissue is developed in the subcutaneous connective tissue, and deeper layers of the corium, causing the affected limbs to become greatly increased in circumference. A good many of the hairs are shed, and this causes the erect position of the hairs that are left to be more noticeable. The causes of grease are both extrinsic and intrinsic. It chiefly affects horses of the heavy type and those with well-feathered legs, who work in dirty surroundings. The intrinsic causes are remote, and are generally put down to digestive derangements, particularly moist fermenting foods. Extrinsic causes are filth and neglect.

Treatment.—This must be prompt and energetic. Attend to diet, pay strict attention to surroundings, see that the stable, bedding, and harness are kept scrupulously clean. Give tonics and alteratives such as arsenic, ferri or cupri sulph.; keep excretory apparatus in order by aperients and diuretics. As in other eczematous diseases the local treatment must oftentimes be experimental, for what may suit one case may not suit another. In a simple case without exudation, ung. zinci may suffice, or a stronger ointment made with exsiccated cupri sulph.; a medicated bath for the legs answers well. Make the horse stand in a solution of copper and iron sulphate with alum. Where there is much exudation it is a good plan to soften and remove the agglutinated material with hot water, to which 5 per cent. of carbolic acid or creolin has been added. The legs should be thoroughly dried after this. Dry astringent dressings may be then dusted over; and I think there is nothing better than exsiccated zinci sulph., with alum and boric acid. Applications of tar answer very well where the attendant cannot be depended upon. If grapes are persistent and do not disappear with ordinary treatment, recourse must be had to their removal by actual cautery, afterwards dressing the cauterised surface with ointment or a dry dressing, or, perhaps better still, place the legs in a medicated bath.

Pityriasis and Psoriasis.

I now wish to speak briefly of the squamous lesions, viz., pityriasis and psoriasis, which often follow on the other forms. The former is a superficial affection, characterised by irregular patches of these scales, which repeatedly exfoliate and recur, but which never form crusts, nor are accompanied by excoriations. In fact it is ordinary dandruff. Pityriasis is frequently seen in horned cattle, affecting the dorsum, rump, and tail. Its

development can be put down to the previously mentioned causes. Treat internally as before, small and regular doses of sodii bicarb. and sulphur answering well. As an application rape oil, oil of tar, and sulphur answers well. According to a well-known author pityriasis in the horse is associated with calcium oxalate in the urine, and on those grounds advises that foods giving rise to oxalic acid in the system should be avoided, such as carrots, turnips, young green foods, &c.

Psoriasis is a much more troublesome affection to deal with. It affects the deeper layers of the skin, and is generally chronic. It extends deeper than pityriasis, and there is a production of connective tissue in the deeper layers. It is in the form of irregular patches which are raised above the level of the surrounding skin; these patches are flat, and often intersected by deep fissures. The commonest examples we have of this are seen in mallenders and sallenders, occurring respectively on the flexures of the knee and hock of the horse. It never seems to spread over a large area, and is usually confined to these spots.

Treatment..—Give a purgative, followed by alteratives such as the iodides, sulphur, calcium bisulphuret, or the liq. calcis iodinatæ. The affected parts should be thoroughly cleansed, and emollients applied. Lanoline and plumbi acet., paraffin and colza oil, with a small percentage of liq. potassæ. Tarry dressing answers well.

Urticaria.

I will now speak of a non-eczematous affection—urticaria or nettle-rash. This is an erythema of the skin with circumscribed serous elevations; these elevations are flat and vary in size from a 6d. piece to that of a small dinner plate. The special character of nettle-rash is its suddenness in appearance, and its equally sudden disappearance. These eruptions are supposed to be directly due to local vaso-motor paralysis, caused by reflex stimulation. They are found anywhere on the body and the visible mucous membranes. In the horse seen most prominently on the neck, while in the cow the mucous membranes and loose skin are more often affected. They are abruptly defined, and there is no exudation on the surface of the skin. There is sometimes a good deal of pruritis. This summer I have had several cases in hunters, and the horse seemed in each case to have severe colicky pains. When seen at first there was no sign of any eruption, but sooner or later they become apparent, when the pain seemed to pass off. Every one is well acquainted with the lesions of the ox, and I will not tire you with detailing them. In the dog urticaria seems to be associated with a much greater degree of discomfort, and the same may be said of the pig. In these animals there is, as a rule, but little systemic disturbance.

Causes of Urticaria.—Generally some disturbance of digestion. This is frequently due to highly nitrogenous food, such as vetches, young clover, peas, beans, and potatoes (when green). Alternating extremes of heat and cold, acting on a susceptible skin. In dogs often due to excess of starchy or sugary food. Also put down to draughts of cold water when the animal is overheated, and in cattle to wading in cold water after being heated.

Treatment.—Very little is required in these cases as a rule. A simple diaphoretic and diuretic in the horse, such as a draught of liq. ammon. acet. and sp. eth. nit., and in cattle a purgative followed by diuretics. Local treatment is seldom called for, though the owner often wishes it, and it is

advantageous to the day-book. Dilute liq. plumbi or dilute acet. acid answers as well as anything. Prevention should be aimed at by removing the offending diet, if that is known to exist.

Gangrenous Dermatitis.

Country practitioners do not see so much of this as the town member. It is generally localised to the heels of horses, and is more noticeable in those with white heels. German writers included it with grease. The layers of the skin become intensely inflamed, with a tendency to necrosis and subsequent gangrene. One may get a great deal of sloughing, causing great lameness on account of its affecting the flexure of the joint, and frequently causing the skin to be fissured. It is usually of traumatic origin, and its pathology is obscure. Extreme cold is put down as a common cause, particularly a mixture of ice and salt, which is so commonly met with on the tram lines in our large towns in winter.

Treatment.—Administer a purgative. Where possible place feet in a medicated bath, which is a solution of the sulphates of zinc, iron, and copper. Strong liq. plumbi is a good dressing. It is advantageous to circumscribe the necrosed part with the hot iron to prevent extension. Dusting powders are of great service; boric acid and iodoform is a good dressing. If, after healing, a thickening remains, use dilute iodine ointment. To say the least, the treatment of gangrenous dermatitis is very troublesome and tedious, and quittor, exostosis, and open joint are not infrequent sequels.

Alopecia.

The last disease to which I wish to call you attention is alopecia. This is perhaps rather a condition than a disease, and is frequently a sequel to any of the preceding affections. Alopecia or baldness needs no definition. The loss may be general or localised to patches. It may be put down to fatty nutrition of the skin, and atrophy of the hair bulbs. The loss is generally temporary, but sometimes permanent.

Treatment.—Results are dubious. Try diluted tr. cantharad. mild blisters. Dilute ung. hydr. nit. often gives good results, and equally good ones are obtained by the use of a dressing of equal parts of paraffin, rape oil, and lime water. This latter application seems to answer particularly well where the loss is from the mane and tail. Repeated shaving where the growth is tardy may assist somewhat. Tarry dressings are used with varying results.

In concluding this paper, I may say that the subject of skin diseases is of such latitude that it is impossible to do it justice in such a short paper. I have not gone deeply into a description of the variously presented lesions; it would weary you too much, and their appearance is familiar to all of you. I expect I shall be accused of bringing to your notice too great a variety of preparations for treatment, but I think it necessary to emphasise the fact that treatment must be often experimental, and what may suit one case may not suit another, and *vice versa*. A good many methods of treatment have been passed over—their name is legion; besides, I trust that some of the members present may suggest better ones than those I have enumerated.

Before I close there are two or three points on which I think particular stress should be laid:—

1. Always where possible get history of the patient regarding its recent diet; the need of doing so is patent to every one.
2. Regarding internal treatment, keep the excreting organs in regular action.
3. Patience and perseverance must be exercised in local treatment, which I again repeat must often be experimental.
4. Strict attention must be paid to having sound hygienic surroundings; observe and enforce strict cleanliness, and see that the patient is not exposed to extremes of heat and cold.

LABORATORY METHODS FOR THE DIAGNOSIS OF CERTAIN MICROORGANISMAL DISEASES.

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THE diseases here described have been placed according to the range of their occurrence in the lower animals; for instance, anthrax, malignant edema, and rabies may be found in most of the lower animals. Actinomycosis, Texas fever, tuberculosis, and blackleg are oftenest found in cattle —Texas fever and blackleg being two diseases peculiar to cattle. Tetanus and glanders, while they occur in other animals, are found oftenest in the horse. Hog cholera and swine plague, as their names indicate, are peculiar to swine. Enterohepatitis, infectious leukæmia, chicken cholera, and roup are fowl diseases. The nodular diseases in fowls and sheep are included because of their resemblance to tuberculosis.

ANTHRAX.

Anthrax is probably the best known bacterial disease, because it was one of the first to be recognised as such. It received a great deal of attention in the early days of bacteriological research. It is one of the few bacterial diseases where a diagnosis can be made with tolerable certainty with the aid of a microscope alone. In an outbreak of this disease there will, in all probability, be a history of very sudden deaths, and its existence in more than one kind of animal. To make a diagnosis, take a bit of the spleen, blood, or liver of an animal recently dead, and smear it on a cover-glass. Allow it to dry, and pass the cover-glass with the smeared side up through the flame of a Bunsen burner three times, occupying one second each time. Now add, with a medicine dropper, a small quantity of Loeffler's alkaline methylene blue as a stain. The formula for this solution is as follows:—To 30 parts of a saturated alcoholic solution of methylene blue, add 100 parts of a solution of potassium hydrate (1-10,000). Allow the stain to remain on the cover-glass for a minute. Wash off carefully in clear water. Lay the cover-glass, stained side up, between two pieces of filter paper and press to absorb the water. When perfectly dry, mount in balsam. If anthrax bacteria are present they can readily be seen, stained blue, under a microscope magnifying five hundred diameters. The bacteria will appear as rods with square ends, *never* blunt or round. They will also be seen in chains, containing a dozen or less cells with square ends in apposition. Spores are not found in the germ in fresh tissues. These

appear very early in liquid cultures, occur about the middle of the cell, and do not cause any bulging. With lenses of good definition, the ends of the stained rods frequently appear slightly concave. When the bacterium is sown in bouillon a profuse growth consisting of flocculi occurs in twenty-four hours slightly below the surface. If shaken the flocculi break up and fall to the bottom. A cover-glass preparation from the culture will show the germs arranged in bundles of long chains. The germ of anthrax measures from 1 to 1·25 microns in breadth, and from 5 to 20 microns in length. In gelatine stab cultures a fir-tree growth occurs along the line of puncture in a day or two, with saucer-shaped liquefaction of the surface. The organism is nonmotile.

An organism appearing in the blood of animals that have died suddenly, and answering the description above given, may with tolerable certainty be called the bacterium of anthrax. The bacillus of malignant edema may be mistaken for it; but here it must be remembered that while this bacillus may be found in chains with opposing ends square, the terminal cell will be found to be *round* on the free end. This germ is, moreover, anaërobic, and is not found in the blood for sometime after death, while the anthrax bacterium is aërobic, and thrives best where it can obtain a good supply of oxygen. This it can do in the circulating blood.

Another method of diagnosing the affection is by animal inoculation. Anthrax material will produce the disease in mice, guinea-pigs, and rabbits, the degree of susceptibility in these animals being in the order in which the animals are named. The younger the animal, the greater is the degree of susceptibility. If such an organism is found in the blood or other organs of these animals after inoculation with a suspected tissue, it may safely be called anthrax, as there is no known pathogenic bacterium having a similar morphology. Dogs are immune from the disease. To test a suspected tissue by means of animal inoculation, grind up in a sterile mortar with salt solution of 0·6 per cent. strength, or in neutral bouillon, a piece of the suspected tissue. Allow the undissolved tissue to subside, and inject a young guinea-pig, mouse, or rabbit subcutaneously with $\frac{1}{2}$ cc. of the extract thus made. If the material is fresh and from an animal recently dead, the inoculated animal should die in a day or two. The bacterium may be found in abundance in the blood, spleen, or liver; or cultures may be made in bouillon from the original material, incubated at 37° C. to 38° C., and from 0·3 to 0·5 cc. injected subcutaneously into animals. The germ can then be identified in the same manner as given above.

Malignant Edema.

Although this organism may affect several species, cases of the disease are comparatively rare, and it occurs only when large surfaces are exposed to infection.

The germ is an anaërobic organism 3 microns long and 1 broad, exists in all climates, and will withstand almost any ordinary physical condition. Its home is in the soil, and it perpetuates its species by reverting to the spore stage when conditions for its multiplication become adverse. It can be differentiated from anthrax by the fact that it causes a local disease, and is not found in the blood during life or just after death. Nor will the spleen or other internal organs be noticeably affected. It is said to be a motile organism, but the writer has never observed motility in artificial

cultures. The spore may be seen in the centre or slightly to one end of the rod, where it causes a slight enlargement. It may be observed in chains, and the opposing ends will be square, resembling the bacterium of anthrax. The terminal cell of the chain, however, will *always* be found rounded on the free end, *never* square. This at once differentiates it from the bacterium of anthrax. It greatly resembles the bacillus of blackleg, but it can be easily differentiated from the latter by animal inoculation. Guinea-pigs are susceptible to malignant edema as well as to blackleg. Rabbits, however, do not die when inoculated with the blackleg organism, while they are very susceptible to malignant edema. In testing a tissue for the presence of this bacillus by means of animal inoculation, proceed in the same manner as described in the paragraph on anthrax, with the following changes. As the organism will not grow in the presence of oxygen, it is better to inject the material, or culture, deeply into the muscles of the gluteal region of a rabbit or guinea-pig. If an attempt is made to use cultures for inoculation, they must be made in an anaërobic apparatus. For this purpose a fermentation tube having one end filled with neutral bouillon, and completely freed from oxygen by three consecutive boilings, is recommended. From 0·2 to 0·3 cc. drawn from the bottom of such a culture should kill a rabbit or guinea-pig inside of twenty-four hours. The bacillus can be obtained in pure cultures from the liver or spleen a few hours after death. In cover-glass preparations made from the edematus fluid of the local lesion of an animal recently dead, the organism is rarely found spore-bearing, as is the case with the blackleg organism. In cultures, however, this organism soon reverts to the spore-bearing stage.

In the inoculated animal there will be found, as lesions of the disease, extensive edema of the subcutaneous tissues. The affected muscles will be found gangrenous and very friable. The liquid poured out into the tissues will be of a sero-sanguinous nature, and has a disagreeable odour The internal organs will not be noticeably affected.

Rabies (Hydrophobia).

This disease is possibly more widely spread than we acknowledge at present. Like anthrax and malignant edema, but to a greater extent, it affects many species. Man and the farm animals usually become infected from dog bites.

Although no bacterium has yet been isolated and proven to be the cause of the disease, it is assumed that it is of bacterial origin. That it is an inoculable disease is shown by the method of diagnosis, which is as follows: A pea-sized piece of the base of the brain or medulla-oblongata of the suspected animal is obtained under the strictest aseptic precautions. This is ground up in a sterile mortar with sterile water. A few drops of this emulsion is injected by means of an ordinary hypodermatic syringe beneath the dura-mater of a rabbit which has been carefully trephined. Usually two or three rabbits are used. The wounds are carefully closed and the rabbits are kept under observation. If the case was one of rabies, it will be noticed on the twelfth day or thereabouts that the rabbits become unusually excitable. This may last one, two, or three days, during which time convulsions generally occur. They then pass into a stage of paralysis, in which the posterior extremities are first affected, and die in a day or two

In rare cases the disease may not show in rabbits for a month. Recently, guinea-pigs, which are said to be more susceptible to the rabies virus, have been used. In these animals the disease is said to develop in about a week. Attention is called to the fact that rabbits develop the paralytic, while guinea-pigs develop the furious, form of the disease. When it is impracticable to perform the operation of trephining, the virus may be injected into the anterior chamber of the eye of the rabbit or guinea-pig, care being take to wound the iris to promote absorption. Of the several different methods of inoculation for this disease the subdural in rabbits has, in the experience of the writer, been found the only reliable one.

Actinomycosis.

The disease is primarily a local one in cattle, but may occur in man and other animals. It occurs extensively in the cattle-raising States, as is indicated by the number of cases noticed in the large stock-yards. It is due to a fungus, the actinomyces, or ray fungus. Infection takes place through an abrasion of the mucous membrane of the mouth or through a carious tooth. The fungus then grows, penetrates any tissue with which it may come in contact, and forms large tumors, usually in the upper jaw, which finally suppurate. The disease may affect any organ.

The diagnosis can be made with a microscope, magnifying two or three hundred diameters by taking one of the little yellowish granular bodies of about one-fifth inch diameter, found very plentifully in the tumor mass, and slightly compressing it under a cover-glass, with or without glycerine as a mounting medium. If the fungus is present it will be seen as a mass of little rays projecting from a centre, or of a rosette shape. The rays will appear clubbed at the peripheral ends. In some preparations, owing to the presence of detritus, the fungus may be ill-defined. Washing in caustic potash solution or acetic acid previous to mounting will usually clear it away. The fungus may also be stained, if it is not visible without it, by Gram's stain. The formula for this stain and its mode of application is as follows:—(1.) Flatten out one of the small granules upon a cover-glass sufficiently to render it transparent, after having washed away all detritus. Fix by heat, immerse in a hot filtured solution of aniline water gentian violet from two to three minutes. (The aniline water gentian violet is made by dissolving a few drops of aniline oil in water, filtering off the excess of oil, and adding a few drops of a concentrated solution of gentian violet.) (2.) Carry directly into Gram's solution of iodide of potassium, and allow it to remain from one to three minutes. (This solution consists of 1 part iodide, 1 part potassium iodide, 2 parts in 300 parts of distilled water.) (3.) Wash in alcohol, 60 per cent., until a light-brown shade remains. (4.) Remove the alcohol by washing in water. (5.) Place in eosin, picro-carmine or Bismarck brown for contrast stain. The fungus will appear stained blue, and all else red or brown, according to the contrast stain employed.

Attempts to inoculate animals or make cultures as a means of diagnosis often result in failures, and is a superfluous procedure for the purpose of diagnosis. Upon glycerine-agar a yellowish growth is obtained in successful cultures, consisting of mycelia—the club-shaped or conical rays, which are supposed to be the spore-bearing organs, not forming.

Texas Fever.

This is a blood disease and exists only in cattle, so far as is known. The cause of it remained in doubt for a long time, owing to the many contradictory conditions surrounding the outbreaks. Dr. Theobald Smith, on October 23d, 1889, read a paper before the American Public Health Association, describing an intra-corpuscular body, a parasitic protozoan, which he has discovered, shown to be the cause of the disease, and named *Pyrosoma bigeminum.*

In cases of the disease, the animal will have continuous high fever of 106°F. or more from four to fifteen days; afterwards a general weakness sets in, and this is followed in a few days by death. In the later stage of the disease the urine becomes highly coloured with hæmoglobin, indicating a frightful loss of red blood cells. This amounts to a decline, in some cases, to one million to the cubic millimeter of blood; whereas the normal number is about five millions. The spleen will be found much enlarged and to contain a dark tarry substance instead of the normal pulp. A condition of this kind in cattle may be looked upon with great suspicion. In addition, when the animals are infested with the cattle tick the suspicion may almost be confirmed. The ticks may be so small as to escape notice at first, but a careful search will reveal them. The tick is regarded as the host of the parasitic protozoan, and in fastening itself to the skin of the animals it inoculates them with the parasite. The parasite multiplies rapidly, enters and destroys the red corpuscles, producing a train of symptoms pathognomonic of the disease.

The parasite may be demonstrated in the red cells during life in some cases. Make smear preparations of the blood drawn from an incision into the skin of the hip. These films are dried and fixed by passing them through the flame three times, film side up; or it is safer to heat the films in a hot-air oven for one hour at 110° to 120° C. Add a few drops of Loeffler's alkaline methylene blue (formula given above) to the smeared surface. After an interval of two or three minutes the specimen is washed free of the stain in clear water and mounted either in water or balsam as desired. If overstained, immerse for a moment in 0·3 of 1 per cent. of acetic acid, and then wash in water.

If the case is one of Texas fever, in which the parasite can be demonstrated ante-mortem, blue dots, sometimes very small, sometimes in pairs, will be found inside of the red cells. The organism also frequently appears pyriform. Sometimes the parasite will be found outside of the corpuscle, or free. In many cases they are not found at all ante-mortem. They may always be found, however, post-mortem, in the spleen, liver, or heart muscle. As no satisfactory method has yet been devised for the cultivation of protozoa on artificial media, the clinical history, the determination of the intra-globular parasite by means of the microscope, and the presence of the ticks will have to suffice in diagnosing Texas fever. There can hardly be any mistake, however, as these means are amply sufficient.

Tuberculosis.

This disease may be found in any mammal, and cases have been reported in fish and frogs. It is, however, most common in cattle. In cattle affected with the disease there may be no manifestation for some time

which is sufficient to arrest the attention. Finally, however, an animal will begin to cough, become feverish, slightly emaciated, and will eventually die. The symptoms will point plainly to trouble in the respiratory tract. In this disease we have an excellent method of detecting even those cases which are in their incipiency. It consists in the subcutaneous injection of a certain amount of toxin produced by the growth in bouillon of the tubercle bacterium. From injecting this tubercle toxin, known as tuberculin, an exacerbation of the disease occurs. There is a sudden rise of the temperature within a certain time after injection, with a corresponding increase in all other symptoms. This method is so accurate that it is safe to condemn all those which give a considerable rise of temperature after the injection of the tuberculin. Tuberculin is prepared by growing the tubercle bacterium in bouillon to which 5 per cent. glycerine has been added. After the growth has gone on for two or three weeks the culture is freed of the live germs by filtration through unglazed porcelain tubes, or by boiling the culture for a short while to kill the bacterium, and subsequent filtration to clear the solution of the dead growth. Carbolic acid sufficient to prevent decomposition is added, and the material, a light-brown liquid, is packed in hermetically sealed, sterilized bottles. It is now a commercial article, and can be obtained from the large manufacturing chemists.

To detect the presence of the tubercle bacterium in tissue by means of the microscope, smear preparations are made as in the case of the foregoing diseases. After fixing by heat, pour on some Ziehl-Neelsen carbol-fuchsin. (This is made by dissolving 1 part of fuchsin in 10 parts of alcohol, and 100 parts of a 5 per cent. solution of carbolic acid.) Pass the cover-glass through the flame of a Bunsen burner thirty times, replacing the solution as it evaporates; or, better, heat the stain in a closed vessel. Allow to cool, remove the cover-glass, and wash off in clear water. Then add, as a contrast stain, a few drops of Gabbett's acid methylene blue. (This is made by dissolving 2 parts of methylene blue in 100 parts of a 25 per cent. solution of sulphuric acid.) Allow this stain to act about one minute. Wash off, and dry between two pieces of filter paper. Mount in balsam or water, and examine with an oil-immersion lens. If the bacterium be present, it will appear stained red. All else will have been decolorized by the acid in the methylene blue solution, and have taken up the blue stain. Two other methods remain by which a diagnosis may be made. One of them is the histological study of the sections of the diseased glands, lungs, or other affected tissues. In these the characteristic tubercle structure may be made out, and in many cases also the bacterium, in preparations stained by Gabbett's method. Another method, probably the most certain, but which requires about three weeks, is the inoculation of some of the ground-up affected tissues into guinea-pigs subcutaneously or intra-abdominally. This animal is quite susceptible to the tubercle organism. A tissue might contain too few of the bacteria for their recognition by the microscope, and yet they might be present in sufficient numbers to start up the disease in guinea-pigs. As evidences of the inoculation disease in guinea-pigs will be noticed extensive alterations in the lymphatic glands, lungs, liver, and spleen. The lungs will contain numerous round yellowish tubercular masses. There may be considerable hydrothorax. The liver will be somewhat enlarged and contain large yellowish necrosed areas, the result of the coalescence of numerous small tubercles. The spleen will be found much enlarged, engorged with

blood, and to present upon its surface numerous greyish tubercular areas. The lymphatic glands will be found much enlarged and to vary from a cheesy to a crumby consistence. In some deposits of salts will have taken place, and these will impart a grating sensation upon section. The bacterium may be demonstrated in properly prepared preparations. Should the inoculated guinea-pig show no emaciation within three weeks, or die, it should be chloroformed and examined, as they frequently remain apparently healthy and yet upon post-mortem may be found extensively diseased.

Blackleg.

Blackleg, otherwise known as black-quarter, quarter-ill, or symptomatic anthrax, is a disease found in calves ranging from 6 months to 2½ years old. The losses from this disease in the cattle-raising States make it one of the most important diseases of our animals. As its geographical distribution does not depend on climatic conditions, it may be found wherever a previous case has existed. At present, however, it exists mainly in the cattle-raising States.

The germ which causes blackleg much resembles the malignant edema bacillus, but is more slender, is often found in pairs, and never in chains like the latter. It frequently forms filaments. It may be differentiated from anthrax by the fact that in animals dead from blackleg the spleen and other organs are not noticeably affected. There may be some reddening of the intestine, but the disease is usually located in the muscles and subcutaneous connective tissue of the thigh and inguinal regions. If the infection takes place in the mouth or throat the disease will be localised in the anterior portion of the body. The animal becomes suddenly lame, usually in one leg. There is a rapid rise of temperature and in the respiratory rate. The animal gets down finally, and dies in a day or two. The affected leg is much swollen. The abdomen contains much gas, and the tissues have a strong butyric acid odour. The best and fattest calves are the ones which usually become affected. If the animal is skinned it will have the appearance of having been beaten with a club.

In a typical case the affected muscles are emphysematous, causing them to be very light and spongy. They exhibit, in addition to the highly inflamed appearance, spots here and there of free blood which has escaped from the vessels.

A differential diagnosis between this and three other diseases for which it may be mistaken—anthrax, malignant edema, and Texas fever—may be made with certainty. In anthrax we have the enlarged spleen; this is never present in blackleg. Anthrax may be found in several species in the same outbreak. Blackleg is not found in horses, adult cattle, or swine. Swine have, however, been reported susceptible. The anthrax bacterium lives and multiplies in the blood. The blackleg bacillus is not found in the circulating blood. Cultures may be obtained from the blood, but this is because the spores are present, they having been absorbed from the local lesion. If the bacillus is present in the blood it is there by accident, and will not multiply so long as the blood contains oxygen, because it is a strict anërobe. The anthrax bacterium is square on the ends, and grows in chains of several cells each, while the blackleg bacillus is blunt on the ends, and does not grow in chains, and is often a long oval in shape, or, if containing a spore, may be spindle-shaped. The anthrax bacterium does

not form spores while it is in the bodies of live animals; the blackleg bacillus does. The anthrax bacterium may be grown on the surface of culture media, while the blackleg bacillus will not grow in the presence of atmospheric air.

The blackleg bacillus may be differentiated from the bacillus of malignant edema, an organism which it greatly resembles, by a study of their respective biological characters, as well as by their range of pathogenesis. The bacillus of malignant edema measures about 3 microns long and about 1 micron broad. The bacillus of blackleg is about the same length and half as broad. The bacillus of malignant edema kills rabbits and guinea-pigs, while the bacillus of blackleg is not known to be fatal to rabbits. In malignant edema the fluid poured into the subcutaneous tissues from the blood-vessels does not contain a large amount of colouring matter, and is therefore comparatively pale, while in blackleg the edematous fluid is very red, from the escaped corpuscles and colouring matter of the blood. Malignant edema rarely becomes epidemic, while blackleg does; blackleg appears throughout the year, and is most plentiful when the spore-containing soil is stirred up by worms, sprouting grass, or from other causes.

Blackleg may be distinguished from Texas fever without difficulty. In Texas fever the spleen is greatly enlarged; there is no lameness or swelling: the urine is wine-coloured; ticks are usually present, and, above all, the intra-globular parasites may be demonstrated in the blood. The ages of the animals affected would also be a valuable guide in diagnosis. Cattle of all ages are susceptible to Texas fever, while blackleg is generally found in those ranging from 6 to 20 months of age.

Tetanus.

Tetanus is found mainly in horses. Like the germs of malignant edema, blackleg, and anthrax, the germ of tetanus lives as a spore in the soil. The spore enters a wound by being carried in on a nail, splinter, or similar wounding body. Being a strict anaërobe, the spore cannot change to the bacillar stage until the wound has healed and shut off the air. When this occurs the spore develops into a bacillus. Each divides into two, and finally when they have become sufficiently numerous they produce by their physiological activity sufficient tetanus toxin to cause the well-known symptoms of the disease. The germ is very difficult to locate, and it is almost useless to look for it in animals when the point of inoculation is unknown. Diagnosis must here depend upon the clinical history. Death may occur in four to five days. Difficulty in mastication and deglutition will be noticed as early symptoms in the horse, owing to the muscles partaking of the general tetanization. The nictitating membrane will also be noticed extending over the front of the eye from a recession of the eyeball caused by a contraction of its extrinsic muscles. Endeavours to force open the jaws will cause great nervousness and increased contraction of the jaw and neck muscles. The spine and legs become rigid and are moved with difficulty, the tail being elevated and motionless. The muscular system finally becomes tetanic, indicated by a constant tremor. There is cold perspiration, locked jaws, retracted eyeballs, drawn lips, and dilated nostrils, the whole constituting a perfect picture of misery, which is ended by death. In many cases the symptoms never reach an acute stage, but are all present in a mild form, and are amenable to treatment. In others the symptoms

are confined to head and neck muscles, while in others the head and neck may be exempt and the symptoms appear in the body and limbs.

The disease is most prevalent in warm climates, and can be produced in mice, rabbits, and guinea-pigs by inoculation with earth from infected localities. The disease is inoculable into all the animals. The toxin produced by the tetanus bacillus is an extremely potent one, a one hundred-thousandth of a cubic centimeter of a filtered bouillon culture being sufficient to kill a guinea-pig.

Glanders.

Glanders is a disease which is oftenest found in horses and mules. Cattle are immune. In this disease the primary lesions are usually in the nasal passages. Here the mucous membrane becomes reddened, infiltrated with tubercles, and finally ulcerated. The ulcers have the appearance of having been gnawed. When a capillary has been ruptured by the ulcerative process, the usual yellow discharge from the nostril becomes streaked with blood. The disease also manifests itself in the skin, causing the lymphatic glands to ulcerate. These ulcers and swellings are known as farcy buds, the names farcy and glanders being regarded as synonymous. The former is an external manifestation. The disease may invade the lungs, liver, and spleen, and does so frequently. In some animals glanders remains latent, and in these cases great difficulty is experienced in making a diagnosis. This difficulty can be readily overcome, however, by using the glanders toxin as a diagnostic agent. This toxin is prepared similarly to tuberculin, and is known as mallein. Its mode of action is similar to tuberculin in that it causes an exacerbation of the disease. This is indicated by a rise of temperature and the formation within a certain period of a tumour at the point of injection. Another method of diagnosis is the inoculation of male guinea-pigs with some of the nasal discharge or other infected material emulsified in normal salt solution or bouillon. Several guinea-pigs should be used, and different-sized doses should be given—say, 0·1, 0·2, 0·4, and 0·5 cc., should be injected intra-abdominally into four guinea-pigs. Those receiving the larger dose may die of septicemia. If the glanders bacterium is present in the injected material, and has not been killed or rendered inert by desiccation or other influences, the guinea-pigs should be attacked in forty-eight to seventy-two hours by a violent orchitis. If the animals live six to eight weeks, the scrotum will ulcerate. The lips and feet also will show a tendency to ulceration. The presence of the the germ can also be demonstrated by means of plate cultures and cultivation on the various media. The organism is a short rod with rounded, slightly pointed ends, a little shorter and much thicker than the tubercle organism. It takes the aniline colours in aqueous solutions rather feebly in parts of the cells, while in others the cellular protoplasm is deeply stained. It grows best upon glycerine-agar as a pale-white transparent streak along the track of the inoculating needle. Upon potato it gives a characteristic dirty-brown colour in about a week. If, however, mallein injections and guinea-pig inoculations fail of results, it may be doubted that the case is glanders.

(*To be continued.*)

A NEW DISEASE IN SHEEP.

An Australian correspondent makes a brief communication concerning an apparently new disease in sheep. He states that during the last three or four years it has been noticed that sheep killed at the Melbourne city abattoirs have the lymphatic glands affected in a peculiar manner, and the number so affected became so large that the City Council asked the Pathological Department at the University to investigate the subject. Dr. Cherry and Dr. Bull have now furnished a report on the result so far obtained. The disease is noticed periodically, and its distribution seems to be determined by local conditions. When at its worst, enlarged glands may be found in from fifteen to seventy per cent. of any given flock. On an average, each affected sheep may present two or three glands so diseased. The health and general condition do not suffer. The glands most usually affected are the prescapular and superficial inguinal. Out of many thousands of sheep examined, nodules of the same nature have been found once or twice in the kidney, but never in the liver or in the mesentery. The affected glands are enlarged, and they feel like a sac containing fluid. On section the contents are fluid and green; the capsule is firm and thick. Investigation showed the presence of a small bacillus in the outer part of each gland. This bacillus is oval, being from 1.2 μ to 2 μ in length and 0.8 μ in breadth. It stains readily with aniline, but is easily decolorised; it is not decolorised by Gram's method, and is non-motile. The most suitable culture-media are agar and blood serum at 37° C. Inoculated into guinea-pigs the bacilli in large doses kill in twenty-four hours, with formation of extensive local œdema.—(*Phila. Med. Jour.*)

ECONOMIC FEEDING OF WORKING HORSES.

BY T. U. WALTON, B.Sc., F.C.S.

In Fiji the Colonial Sugar Refining Company has about 1000 head of farm horses, which, until a few years ago, were fed chiefly on oats and corn, with some green sugar-cane tops in addition. But this did not prove satisfactory in the trying tropical climate; sickness was frequent, and the death-rate high, while the charge for fodder was very heavy. As large quantities of waste molasses were available, it was thought well to investigate whether the sugar in this material might not be advantageously used as a substitute for some of the starch in the ordinary food. When these trials were commenced care was taken to begin with only small quantities of the new fodder, lest the high proportion of salts should prove too laxative. With the growing appetite for it the proportion of molasses was gradually increased till as much as thirty pounds per day were given regularly to many of the animals. This large proportion was after a time, however, reduced to fifteen pounds; not by reason of any ill effects beyond a tendency to fatten, but because it was considered too risky an experiment with so much valuable stock. Contrary to expectation, the molasses diet produced constipation, instead of being laxative, and a few pounds of bran had to be given daily to keep the bowels in order. The ration finally adopted was 15 pounds of molasses, 3 pounds of bran, and 4 pounds of corn per day, with as much green cane tops as the animal could

eat, the molasses being mixed with the bran and chopped cane tops. This ration had been fed daily to over 400 head of horses (at the time the paper was read) for nearly two years, with the following results, which we quote from the article: There has been no undue fattening nor injury to the wind, and no tendency to excessive perspiration or softness. In the early stages of the trials a dozen of the animals were weighed once a month, the average weight at the start being 1273 pounds. After the first month there was an average loss of weight of 15 pounds per head; after the second month, 4.5 pounds of the loss had been recovered, and after the third month there was a further gain of 16.5 pounds, making a gain over the whole period of 6 pounds per head. Sickness, which formerly was frequent, is now uncommon, and the horses are capable of performing harder and more continuous work. The improvement in this respect is so great that while the area of cultivation has been largely increased, it has not been necessary to make any addition to the working stock. The conclusions which Mr. Walton thinks can be fairly drawn from the trials made are:

1. That for working horses the sugar in cane-molasses is a satisfactory substitute for starchy food, being readily digested and transformed into work.

2. That fifteen pounds of molasses can be given to a 1270-pound working horse, with advantage to the health of the animal and to the efficiency of its work.

3. That it produces no undue fattening, softness, nor injury to the wind.

4. That the high proportion of salts in it has no injurious effect.

5. That the albuminoid ratio as low (wide) as 1 to 11.8 has proved highly suitable for heavy continuous work when a sufficient quantity of digestible matter is given.

The following is the composition of the daily ration per 1000 pounds, live weight: 1.13 pounds digestible albuminoids; 13.31 pounds digestible carbohydrates (including 0.24 pounds of fat). Albuminoid ratio, 1 to 11.8.

(*To be continued.*)

Review.

SCIENTIFIC HORSESHOEING. By Professor WILLIAM RUSSELL. 4th Edition. Cincinnatti: The Robert Clarke Company. $4.00.

Professor William Russell has, contrary to his expectation we are told, been compelled to relinquish his determination to make the third edition of his "Scientific Horseshoeing" the final one. He states, "Since the publication of the third edition of my treatise on Scientific Horseshoeing, so many additional cases have come to my attention of the results of neglect of the horse's foot, that I have concluded to embody them, with copious illustrations, in a complete final work, to embrace all the important matter contained in the first, second, and third editions, as well as the additional contents comprised in the fourth edition." Further, "my sole object in getting out the fourth edition . . . . is to give my former as well as other patrons the benefit of the new illustrations, showing the different

diseases to which the feet and legs are subjected, as I maintain always seventy-five per cent of the foot and leg diseases are caused from unbalanced feet."

The last sentence gives the kernel of the matter. Professor Russell is great on the proper levelling and balancing of the feet, and has exercised his ingenuity in devising what he calls a perfect foot adjuster.

It is a little difficult to exactly define the scope of this work, as many apparently outstanding subjects have received treatment in it. For example, one chapter treats of the horse in general, and contains hints regarding the means whereby we should judge the useful qualities of light horses.

Apart from these pleasing excursions into the domain of things in general, we may say that the book follows along the lines customarily followed by writers on the subject.

The ancient divines of Westminster could not have drawn up a catechism in better form than that headed "Brief Outline of Anatomy of the Foot." We cull a few questions and answers by way of justification of our statement. "Q. 1. What constitutes the apparatus of locomotion? A. The bones and muscles co-operating with the vital organism. Q. 2. What does the 'foot' or 'digital region' imply? A. It includes the ankle from the fetlock down, comprised in a single hoof. Q. 6. What completes the jointed processes? A. They are held together by ligaments, and are lubricated by the synovial fluid secreted by the inclosing membrane. Q. 7. What further of their work? A. That they are of special importance to the value of the animal, and are the parts most subject to impairment from injury or disease. Q. 18. What is scientific horse-shoeing? A. It is a noble artificial skill of man working in conjunction with nature, to keep the foot in its natural formation. The shoe is to protect the foot from external injuries. Q. 19. How many acts are there to be performed before the foot is properly shod. A. There are three acts required: First, to remove all surplus growth, and properly shape the foot to its natural form and size. Second, to select a bar of iron or steel, make and fit a shoe of suitable weight for which the foot and leg requires, and the work the horse has to perform, and fit properly to the foot. Third, to nail the shoe to the foot." We regret to have to say that we have forgotten our Shorter Catechism (of course we once knew it), but we feel convinced that some of the above questions and answers bear a striking resemblance to those contained in that ancient publication.

Among much chaff there is also much grain; but we fear that we are unable to agree with a sentiment apparently implied in the introduction to the effect that this work will tend to take the place of European works both in Europe and America.

Professor W. Owen Williams sailed from Southampton on the 20th of January *en route* for New Orleans, whither he is proceeding for the purpose of giving his professional advice respecting the purchase of remounts for South Africa.

ERRATA.

In the January number, page 21, Army Veterinary Department—

For M'G. Glane *read* M. St. G. Glasse.
„ C. H. Hylton Yaliffe *read* C. H. Hylton Joliffe.
„ A. N. M. Hamilton *read* A. N. M. Swanston.

CONTAGIOUS DISEASES ANIMALS ACTS, 1864 AND 1899.

SUMMARY OF RETURNS OF OUTBREAKS for the Four Weeks ending 13th January 1900.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for month of December).
None.	Outbreaks 129 Slaughtered 1480	Outbreaks 66 Attacked 112	Dogs 1 Other Animals 0 Destroyed 1	Outbreaks 14 Attacked 26	Outbreaks 321

SCOTLAND.

None.	Outbreaks 1 Slaughtered 1	Outbreaks 2 Attacked 4	None.	Outbreaks 13 Attacked 17	Outbreaks 13

IRELAND.

None.	Outbreaks 3 Slaughtered 83	Outbreaks 0 Attacked 1	Dogs 5 Other Animals 0 Destroyed 0	None.	Outbreaks 80

Communications, Books, Journals, &c., Received.

Veterinarian; Record; Bulletin of The John Hopkins Hospital; The Journal of Comparative Medicine and Veterinary Archives; The Scottish Medical and Surgical Journal; American Veterinary Review: The Public Health Journal; The Journal of the Jamaica Agricultural Society; Queensland Agricultural Gazette; Petersburg Veterinary Society's Journal; La Riforma Veterinaria (Naples); Recueil de Médecine Vétérinaire (Alfort); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); Deutsche Thierärtzliche Wohenschrift (Hannover and Karlsruhe); La Clinica Veterinaria (Milan); La Revista Veterinaria (Buenos Aires); Agricultural Journal (Cape Town); Bulletin de la Société des Sciences (Bucarest).

We regret that, owing to great pressure, we are unable to publish this month several important communications, &c. received from contributors.